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ComputerWeekly
Thursday, August 4, 1983

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Japanese fifth is well on song

by Kevin Cahill

DESPITE some shortcomings, the Japanese fifth generation project poses a serious threat to the computer manufacturers of the West. This is the view of SPL Insight director Bob Muller and his team of nine Insight members who recently completed an intensive study of the project in Japan, followed by 10 days in the US, examining the US response to the Japanese programme.

The team will shortly present a report on their trip to Brian Oakley, the head of the Alvey Project, which is the UK's multi-million pound response to the Japanese initiative.

In addition, Muller and SPL are organising a major world conference at the end of September in London to give wider currency to the results of the study tour in Japan and the US.

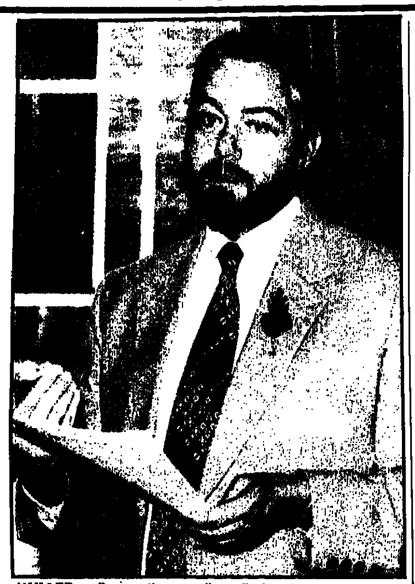
According to Muller the Japanese fifth generation project is really underway, with a total of about 300 people involved directly in the work of ICOT, the Institute for the New Generation Computer Project.

ICOT has about 40 staff, but each on-site staffer is backed up by a complete team in the company from which they originate.

The £10 million or so of funding allocated to ICOT is being spent on hardware and not on salaries, and while all the companies share the information from ICOT, there is no subsequent lateral co-operation, Muller said.

A good example of the independent stance taken by the companies is the way Fujitsu, Hitachi and NEC, all participants in the scheme, are each independently producing competing vector processors, the true supercomputers and vital components of the fifth generation architecture.

The major shortcoming in the Japanese approach, according to Muller, was the apparent lack of any real work being carried out on knowledge-based systems, and on expert systems, two main elements of the final fifth generation project.



MULLER . . . Japanese "expect to dispense" with software engineering.

Despite the lack of detailed work however and perhaps the most ominous sign of all, was the fact that the Japanese expressed little or no interest in software engineering tools.

"They expect that using the new techniques will allow them to dispense with the need for such tools," Muller said.

Market boom produces a dollar billionaire

by Kevin Cahill

AMERICA's stock market boom, which began in August last year, has made fortunes for some and added spectacularly to the wealth of others, many of them from the computer industry.

Heading the league is David Packard, founder of Hewlett-Packard, who accrued $1.2 billion to his existing HP-based riches of $900 million.

The analysis of winners in the roulette game of the stock market appears in next week's issue of *Fortune* magazine and shows 14 computer company executives among 53 people who have gained over $100 million over the past 12 months on their existing shareholdings.

Top place goes to David Packard, who founded his company with less then $600 in a one-car garage in 1939.

But Packard's amazing gain is closely followed by the $599 million which his partner William R. Hewlett added to his fortune, and which gives him the No 3 slot in *Fortune's* table.

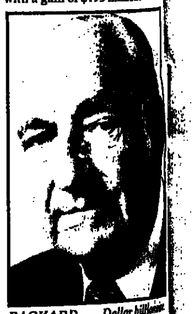
The seventh and ninth slots go respectively to H. Ross Perot of Electronic Data Systems who added $412 million to his pile; and Dr An Wang the Chinese refugee who founded Wang Laboratories, who adds $357 million.

An Wang's son, Fredrick K. Wang, executive vice-president of Wang Laboratories, adds $183 million to the value of his shares at the age of 32.

Steve Jobs 28-year-old founder of Apple Inc., adds $265 million to the value of his shares for the number 16 slot, closely followed by ex-Apple chief executive Mike Markkula who makes the notable 22 rung with a gain of $222 million.

A less well known director of Apple, Henry E. Singleton and the founder of Teledyne, has accumulated an extra $178 million on his shares in both companies.

Other famous names are Irving Gould, Commodore International chairman who lives in the Bahamas. He is $217 million richer. Immediately next in 26th position is Gordon E. Moore of Intel, who is $208 million better off this year. Bob Galvin, the chief executive of Intel rival Motorola, comes 33rd with a gain of $193 million.



PACKARD . . . Dollar billionaire.

Home control gadget wins Stirling over

by Donald Kennett

US TOY maker Mattel has realised early home computer pundits' dreams of controlling domestic appliances. Its £80 Aquarius micro includes a home control system peripheral, which has won the approval of gadget-freak Stirling Moss.

"I have a house full of easy-going gadgets," he said when he came along to the launch to say how impressed he was. "I can even fill the bath just by pushing a button. But it appears that what we have here can do more than my system can — and would have saved me money."

Mattel stops short of supplying interfaces and devices to fill baths, nor does its system allow for cross control from different parts of the house as Moss's own 176 installed circuits do. But it does allow 256 devices or groups of devices to be switched on or off at pre-set times.

Systems of this type are enjoying a boom in the US. Mattel scores in the software that supports setting up the system. Diagrams of each room in a house can be displayed in turn. The user enters symbols and settings for each device on a grid of likely locations.

Aquarius is aimed firmly at the home computer user, says UK managing director Mike Lunch. "It's not going to give IBM a headache, but it does aim to have wide appeal. I will be very disappointed if we haven't sold 100,000 units by the end of the year."

Electronics is now one of Mattel's most important activities claims Lunch, with the Intellivision video games machine the most important product.

But the US games market is shrinking rapidly, and companies like Mattel and Atari are making heavy losses. Mattel reshuffled its management in June, and announced that it would lay off 15% of its electronics division staff.

Its electronic division lost $35 million in the first quarter.

MOSS . . . "It would have saved me money."

Nixdorf set to invest in Trilogy

TRILOGY Corp, Dr Gene Amdahl's newest mainframe venture, looks set to acquire another European investor as talks with Nixdorf continue. Trilogy, based in Cupertino, California, was set up in 1981 by Dr Amadahl and his son Carl with the aim of developing a new IBM compatible mainframe computer.

The company initially raised a total of $183 million. About $1 million of the original venture funds came from the Industrial Development Authority in Ireland where Trilogy will have its European manufacturing, and $13 million from Cii-Honeywell Bull in France.

Recently Sperry Corp, faced with cooling problems on its newest mainframe, turned to Trilogy with a $42 million investment which gives Sperry access to the Trilogy technology, including a new water cooling system.

Following Sperry, Digital Equipment this week announced a major investment in Trilogy, just as the architect of the get-together, Gordon Bell, left DEC to join Encore, a new venture.

When Dr Amdahl founded Amdahl Corp, Heinz Nixdorf was an early investor with over $6 million, which realised $60 million. This time around he said he would not be going in as Nixdorf was not in the mainframe business.

That was before Christmas and since then a stream of Nixdorf directors and managers have visited the Trilogy plant and, like everyone else, have been impressed.

Computers go into the clubs

by Nuala Moran

OVER a thousand social clubs in the north-east are about to move into the computer age.

Federation Brewery, which supplies beer to over 1,500 clubs in the north-east, is to market micros capable of handling the paperwork and stocktaking for most clubs.

This could be a boost for ICL as the software is designed to run on ICL personal and DRS 20 computers. The software was written by Online Computer Services (OCS).

The entire package will cost between £4,500 and £5,000. Each unit will keep a record of bar takings, record payments to staff, deliveries and invoices, and keep a day by day stock record. Some clubs have a turnover approaching £1 million, so this will save much paperwork.

Roger King, Federation's DP manager, said the system had been shown to several club stewards who were impressed with it. Two clubs will take the system immediately, and about four clubs will install it by Christmas. This will give us a chance to ensure there aren't any bugs in the software before a big marketing drive next year."

Clubs will be able to buy, lease or rent the machines.

"There are various ways of financing outlets and the brewing industry is adept at finding ways of pushing money out," King explained. But he stressed that the voluntary committees which run the clubs are their own master and have to be persuaded to use the system.

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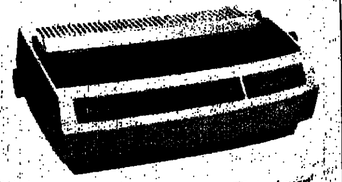

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ComputerWeekly
Thursday, August 11, 1983 Number 872 35p

Lisa's in demand and Cork is buoyant

by Kevin Cahill

OVERWHELMING worldwide demand for its Lisa has persuaded Apple to start early production of the model at its plant in Cork, Ireland.

Employees returning from annual leave last week went straight into the first phase of assembly of the new machine, and company management were pointedly referring to the spare acreage around the plant with a view to further expansion.

The demand for the Lisa comes none to soon for the Cork plant, which has faced a significant problem of overcapacity in the Apple III production line since late 1982.

Production plans at Cork were tied to market forecasts for Apple I deliveries in Europe, but the forecasts were not met.

Sales of the 111 fared little better in the US which caused leading analysts to predict that the company would withdraw the product this autmun. This has not happened and sales of the Lisa have eliminated the danger of lay-offs which have occurred at other companies such as Osborne (see back page).

Apple is introducing the Macintosh this autumn to compete in the $600 to $1,000 market and has already won large scale acceptance for a product built around Macintosh in US educational establishments.

The company is promising a raft of other products and the third quarter ended July 1 brought an 87% increase in sales world-wide, justifying the company's continued optimism.

With micro companies all around declaring losses, Apple showed its profits for the quarter up by 59% to $24.2 million.

Honeywell pairs up with Ericsson

by Donald Kennett

THE pairing of computer companies with telecommunications companies gathers pace with the announcement last week of a joint research and development venture by Honeywell and Ericsson Information Systems (EIS).

Co-operative deals have been signed between a number of computer and telecommunications companies including ICL and Mitel, IBM and Rolm, and Sperry and Northern Telecom. Philips and AT&T last week signed the final details of an agreement they made in principle in January, which marks AT&T's first major move on to the international scene (see back page).

EIS president Haakan Ledin will be chairman of the US venture, Honeywell-Ericsson Development, which will develop private telecommunications and office automation products to be sold by both parent companies.

The plan is to start operations in October at sites already owned by the two parents.

Ericsson, whose US subsidiary is 50% owned by Atlantic Richfield, has a site in Anaheim, California, which has been developing US versions of its MD-110 digital PABX and Eripax packet switch

Leader Comment — page 11.

LEDIN . . . "US move will be major contribution."

SPENCER . . . Support.

for two years. Honeywell has a site in Dallas, Texas, which has been working on another PABX.

Ledin said: "Our presence in the US with active product design will be a major contribution to Ericsson's business."

The parent companies will have equal shares in the joint venture and will share its management equally. They expect to transfer 150 technical staff into the venture by early next year.

Honeywell chief executive and chairman Edson Spencer said that the technology and products gained through the agreement with Ericsson would enable his company to provide building owners and tenants with highly integrated communications and control systems. The systems would bring together environmental control, energy management, protection systems and voice, data and video communications.

"In addition, the fully integrated voice and data systems to be developed by the new company will provide a relationship between communications, data processing and office automation to support Honeywell's computer and office automation businesses," he said.

US-based Honeywell's activities in information systems, defence, aerospace and control systems turned over $5.5 billion last year. Swedish-owned Ericsson turned over $2.6 million.

Honeywell has been working its way into telecommunications for some time and has already taken over several small US PABX suppliers. Ericsson took over the Swedish minicomputer manufacturer Datasaab in the late 1970s and has been active in the office automation market, but has made a relatively small penetration of the US market.

■ See also back page.

PoS supplier is set for the USM

REAL Time Control, the UK's largest supplier of point-of-sale systems, next Monday joins the Unlisted Securities Market with a capitalisation of £103 million. Broker Simon Coates says that there has been no trouble placing 75% of the stock before the listing begins, and expects the financial public to squabble for the remaining 25% of the equity available at 148p a share.

Alvey director

CHRISTOPHER Barrow, technical executive with Plessey Office Systems, has been appointed director of the man-machine interface section of the Alvey Programme and started his new job this week. David Thomas has been confirmed as director designate of Information Technology at the Science and Engineering Council based at the Rutherford Laboratories. His new post will integrate with his directorship of the IKBS section of the Alvey Programme.

BCS position

DONALD Davies, head of the data security section in the computer division of the National Physical Laboratory, takes over in October as vice president (technical) of the British Computer Society. John Ivinson is at present deputising in the post since David Butler of Butler Cox & Partners resigned for personal reasons.

Chairman Maggie

MRS THATCHER is to chair a seminar which will discuss the ways in which basic research can be converted to high technology products. The seminar will be at Lancaster House on September 22. Up to 240 academics, scientists, industrialists, financiers and civil servants will be invited.

ICL turns down Fujitsu's super overtures

by Kevin Cahill

ICL IS resisting entry to the eclectic world of supercomputers as Fujitsu presses for a marketing deal on its new VP 2000 scientific processor.

ICL's negative stance is consistent with the position the company adopted when Fujitsu ran a supercomputer conference in London earlier this year, with the express intention of getting a deal with ICL.

ICL refused to sign then, and managing director Robb Wilmot is maintaining the same stance now, despite a flurry of rumours in Tokyo and New York which say that he will sign up.

Wilmot will give no reason for his negative decision, but computer industry analysts have suggested that to add another capital goods division, with even longer lead times than for the Fujitsu supplied Atlas machines which ICL currently markets, would be financially unsound.

And the analysts see the rumours as a further attempt to pressurise Wilmot to take the VP 200.

What the analysts have not seen, but which Wilmot has, is the internal Fujitsu specification for the VP 200, which shows that the machine is merely a souped up Atlas 10.

Against publicly quoted speeds from Fujitsu officials of 500 to 600 millions of floating point operations per second (Mflops) the internal documentation shows that the machine has a peak throughput of between 250 (VP 100) and 500 (VP200) Mflops.

There are two machines in the VP range, the VP 100 and the VP 200. Both would be expected to perform at around 50 to 100 Mflops, far below the wildly optimistic peak rates being quoted in the Japanese technical press.

According to the Fujitsu specification Processor logic is 500 to 1,300 gate emitter coupled logic with a delay time of 350 picoseconds.

Main memory (RAM) is four 4Kbit modular bipolar, with 5.5 nano second access, complemented by 64 K MOS static chips with 55 nano access time.

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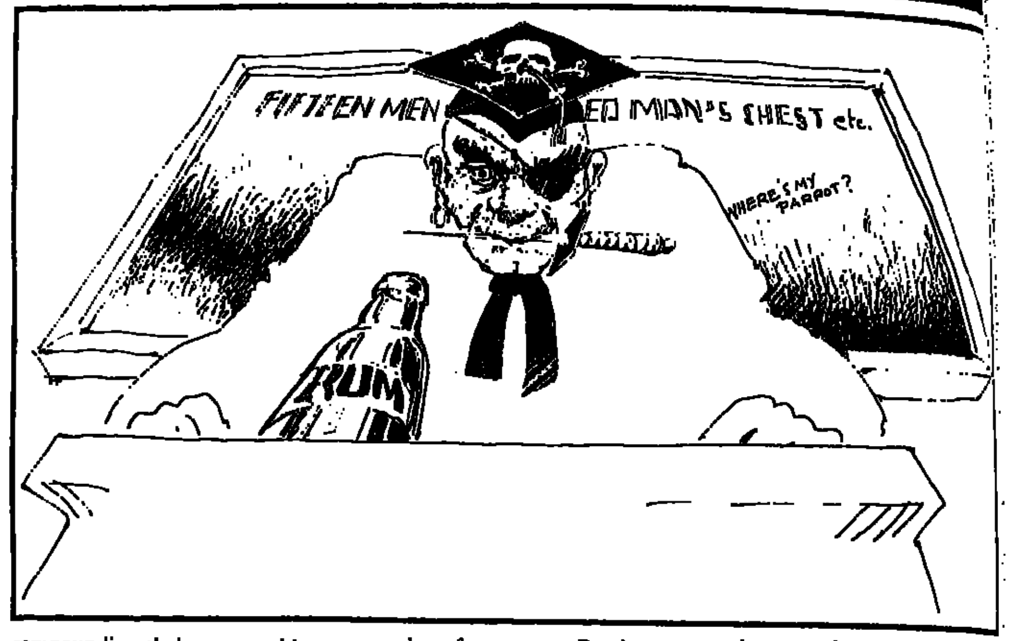

by George Black

TEACHERS are among the main offenders in the growing wave of software piracy, according to the International Council for Computers in Education.

The ICCE, based at Oregon University, says some teachers are setting a bad example to their pupils by blatantly copying software for use in schools which they have no legal right to duplicate.

President David Moursund is calling for the adoption of a new policy statement for network and multiple machine software in schools.

The policy, written by a committee of teachers, software publishers and vendors, has the backing of the ICCE, which represents some 39 organisations worldwide.

Software authors have been pressing the ICCE to try to get a fair deal for their efforts from the educational world.

Research Machines of Oxford is one of the principal school computer suppliers. Its technical support manager Paul Maskens said many education authorities did not stress that copying was illegal and probably many teachers were unaware of this.

But the main problem of piracy stemmed from software publishers treating the educational world as if it were a commercial concern, he said.

"They are reluctant to let teachers try out the material, so teachers copy other people's programs just to see what they are like," he said.

A conference of 400 people held by Microcomputer Users in Secondary Education (MUSE) at Nottingham University last month heard of teachers' problems getting hold of satisfactory software.

Northamptonshire representatives complained of the difficulties of obtaining a history package.

Others said that software publishers were snapping up good programs written by teachers but compounding their own problems by not allowing demonstration copies to be released.

Maskens said that there was still no really satisfactory means of preventing the unauthorised copying of programs. But in many cases, he said, educational software was so cheap that there was no real incentive for copying it illegally.

Teachers would do it mainly as a short-cut, he argued.

Research Machines alleviates the dangers by licensing in bulk to local education authorities which then had the right to copy programs for schools.

Microcom bids for a standard

by Donald Kennett

US-BASED communications specialist Microcom has kicked off a bid to establish its error-correcting file transfer protocol for microcomputers as a *de facto* standard.

It has won the endorsement of five industry leaders – Apple, Visicorp, GTE Telenet, Victor and ADP.

Barry Abrams, vice-president for finance and administration, said that the company had implemented the protocol two years ago as part of a $150 electronic mail program for Apple IIs called Micro Courier. It had been marketed on the basis of its providing reliable file transfer from one Apple II to another.

"There are many others," he said. "But they are all different – they can't communicate with each other. We have expanded ours to add dissimilar devices – you would be able to send a file from a TRS-80 to an Apple III or an IBM PC. And five companies will support our protocol on their systems."

The protocol has not yet been implemented on the IBM PC, he explained, but it has been incorporated into two of his company's modems. These can be used with any micro, mini or mainframe that has an RS-232 interface.

One of the modems, the $995 PCS Series 2000, implements the full file transfer protocol, to support which it has a 64Kbit dynamic RAM buffer. The other, the $895 RX-1000, implements only the link level protocol with error correction.

"These are the first error-correcting modems in one single unit with an autodialer," Abrams said.

Both modems auto-answer and can store up to nine telephone numbers for autodialing. The fancy one has a real time clock with a liquid crystal display for scheduling the dispatch of electronic mail at pre-set times and dates. It also has two serial ports – one for the computer and one for a printer.

The company has no plans to sell into the UK. "We are looking at Europe and South America, but there is still a lot to do in the US – at least through this year," Abrams said. But the protocol is easily available to UK firms. It sells for a one-time licence fee of $2,500 which covers documentation on the architecture and how to implement the protocol.

The protocol, MNP (Microcom Network Protocol), relates to five of the seven layers of the International Standards Organisation's Open Systems Interconnection architecture.

ASTMS says R&D gets a poor deal

WEBB . . . "Defence profile is high."

by John Riley

INDUSTRIAL R & D gets a poor deal from the government, says a report published this week which calls for a shake-up in funding.

The report, published by ASTMS (the Association of Scientific, Technical and Managerial Staffs), says that industry does not see much from the main sources of government R & D funding, which are channelled through the Science Budget (for university research), the Energy Department (mainly for nuclear energy) and the Ministry of Defence.

Most of the innovation support for industry comes from the Department of Industry and Trade's Support for Innovation Programme, budgeted at £218 million for 1983-84.

The scheme gives grants of 25% to 33⅓ for R&D projects up to the value of £5 million and demands a lot of bureaucracy, whereas the West German government gives 50% grants with less formality, says the report.

ASTMS believes that the UK needs a coherent overall strategy for technological innovation. According to the report: "An effective innovation policy must identify key technologies for support, provide an integrated national strategy within which government support policies operate, and be clearly related to economic and social objectives."

When asked whether the Alvey Programme fulfilled these criteria, Tim Webb, ASTMS' national organiser agreed, but had qualifications: "The Ministry of Defence has too high a profile in Alvey, and there is a danger that the social objectives will be siphoned away," he said.

Research and Innovation in the UK. ASTMS. Details: 01-267 4422.

AT&T is ordered to drop the Bell

by Donald Kennett

AMERICAN Telephone & Telegraph last week accepted the US District Court's requirement that it give up the trading name "Bell" when it divests itself of its 22 operating companies next January.

The requirement is one of the conditions Judge Harold Greene made in July for accepting the terms of the settlement between AT&T and the Justice Department. The deal ends a nine-year anti-trust suit against AT&T and allows the company to enter new computer-related telecommunications markets.

AT&T chairman Charles Brown said that the company had just spent $30 million promoting the name of its new marketing subsidiary American Bell, but that appealing against Judge Greene's decision would have created years of uncertainty for the company.

American Bell will be renamed AT&T Information Systems.

Bell Laboratories and AT&T's foreign affiliates will be allowed to keep using the name, but apart from that the entitlement to use it will pass to the seven new regional companies that will take over the 22 local operating companies.

The logo of a bell in a circle that AT&T has used since 1889 will be replaced by a blue globe with white grid lines.

AT&T will keep its long distance telecommunications services, which will operate under the name AT&T Communications, as well as the manufacture and sale of telephones and switching systems by its Western Electric subsidiary and its research activities at Bell Labs.

Judge Greene approved the settlement between AT&T and the Justice Department in principle last year and last month drew up his final conditions for giving the go-ahead to the plans outlined in it.

As well as the requirement to drop the Bell name, the conditions included allowing the operating companies to sell rights to AT&T patents.

CAD buyers grant is cut by a third

by Nuala Moran

THE size of the government grant available to firms purchasing CAD manufacturing and test equipment is to be cut from £60,000 to £40,000. But at the same time Kenneth Baker, Minister of State for Industry announced that £5 million will be added to the grants funds.

This scheme is distinct from the DoTI's CAD/CAM awareness scheme which was recently revamped and given an extra £10 million. Under this scheme the DOTI provides half the cost up to £50,000 for firms to hire consultants to plan the introduction of CAD techniques.

The CAD manufacture and test equipment scheme was launched in July last year with £12 million in the kitty. It was intended to be a two year scheme but all the money was committed by the end of this June.

A spokesman for the DoTI said that the money was taken up far more quickly than expected and that most of it went to big firms who got a maximum £60,000 grant.

He explained that the maximum grant will be reduced from £60,000 to £40,000 to give more firms a chance to get a bite of the cherry. The reduction is also intended to favour smaller firms.

Applications already in the hands of the DoTI will still qualify for the existing maximum grant of £60,000. The DoTI spokesman said the availability of funds will probably be demand-led and the government will make more money available once the current £5 million is spent.

The scheme covers the mechanical, electrical and electronic engineering sectors and is available for the purchase of new systems. There is no upper limit on the size of firm that may apply but it must be a first time user of CAD equipment.

The grant covers a third of the total cost of the equipment, if the investment is more than £120,000 the firm must pay all the remainder.

Companies which take advantage of this grant are not excluded from applying for other DoTI monies such as those available under the CAD/CAM awareness project.

Cray can export supercomputers to France

by Philip Hunter

CRAY Research has been granted US government approval for the export of a supercomputer to France after an effective ban lasting a year.

The company will ship a Cray-1 S supercomputer worth $5.8 million to the French government agency, Commissariat a l'Energie Atomique this autumn.

Previous requests by Cray for export permits to France had been refused by the US Department of Trade and in December 1982 John Carlson the company's finance director gave up the fight and announced that markets would have to be sought elsewhere.

France responded to the failure to import Cray supercomputers by announcing in February 1983 a £40 million plan to build its own supercomputer.

The plan was to develop a machine for military and scientific applications over the next five years. It would be built by loss-making state-owned giant Cii-Honeywell Bull in partnership with Sintra, part of the also nationalised central electricity board.

Export permits for the Cray machines had been withheld in the last months of 1982 and early this year, following advice believed to come from the CIA that socialist France was not to be fully trusted with such advanced machines.

But Mitterand's continued stand against Russian foreign policy has been more pronounced than that of many western allies and sufficient to convince the US that it is after all a reliable ally.

Cray would not comment on the change of heart.

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Circulation Dept Business Press International (SBO) Ltd, Oakfield House, Perrymount Road, Haywards Heath, Sussex. Tel: 0444 459188.
Publishing Director: Dr J. A. G. Thomas
Editorial Director: Chris Hipwell
Published weekly on Thursday. Registered at the Post Office as a newspaper. ISSN 0010-4787.
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Cobol expert proposes some radical changes

GARFUNKEL . . . "Are we doing more harm than good?"

by George Black

A RADICAL proposal for speeding up the evolution of Cobol has been made by a member of the language's two controlling bodies, Jerry Garfunkel.

He wants standardisation to be split into two phases, with a long-term cycle of revisions every 10 to 15 years, punctuated by development modules every two years.

Garfunkel was commenting on his own prediction that the long-awaited standard would be agreed in early-to-mid 1984.

He serves on both the Codasyl Cobol monitoring committee and the American National Standards Cobol committee, which met in London this week.

Cobol-84 is expected to contain rules on structured programming, for which industry experts have been pressing, and may also legislate on intrinsic functions, such as dates.

But it will leave most of the data processing world feeling that it lags way behind the times.

Garfunkel argued that features such as the VALIDATE expression, database management and screen handling, which would not be in Cobol-84, could not afford to wait until the next standard.

"If we have to wait until 1997, what's the point of a standard? Are we perhaps doing more harm than good?" he asked.

VALIDATE had been thrown out by a large majority vote and database management remained stuck on a controversy over eligible data types, he said.

He made his appeal for a new structure to language developments at a meeting of British users and vendors arranged by the National Computing Centre.

The NCC's Cobol group leader Vony Gwillim backed Garfunkel's views.

"We're still living in the batch world," she said. "It's wrong to have to wait until everyone has already done their own thing."

Garfunkel blamed public relations campaigns by pressure groups for hindering progress. Out of 2,200 comments on the last revision 1,700 came from the same source, Travellers' Insurance, he alleged.

Discussions were now "90% political, 10% technical" as the date for consensus neared.

The big US manufacturers which dominated the committees did not want any more new features thrown in because they were nervous about meeting customers' deadlines. At least three were already building Cobol-84 facilities into their compilers, said Garfunkel.

At present the British voice is only heard through ICL, Micro Focus and the NCC; the European view goes unrepresented. But Gwillim said we only had ourselves to blame for this, as the Americans had encouraged greater participation.

Garfunkel defended the relationship between Codasyl and Ansi which has often been blamed for slowing up official procedures.

"At times I feel it is frustrating, but on balance I think Cobol has got to a strong position by this means while other languages haven't," he said.

Even if it took bureaucracy two years to tidy up details after Cobol-84 was agreed, it would not matter because manufacturers would have the confidence to act on the standard.

He warned buyers that the arrival of the micro would make their decisions more difficult, as different levels of standardisation applied.

His predictions for future standard features included allowing free-form coding, ignoring the traditional column rules.

Germans get the lion's share of Esprit money

by John Riley

GERMAN companies and institutions take the lead in the £14 million European Esprit pilot projects, which were formally announced last week.

They are taking part in 23 of the 36 collaborative projects funded for one year by the European Commission, and Siemens is involved in 10 of them. UK participants are listed for 21 of the projects, and Plessey and GEC are respectively taking part in seven and five projects.

As expected, large IT companies dominate the programme, which is 50% funded by the Commission. Many of Europe's medium sized companies did not apply to the Esprit programme for several reasons, spelled out recently by the Association of the European Informatics Industry.

The objections were: that it is inadequately funded, that it benefits only large companies, that it only funds pre-competitive research and makes no provision for competitive research, and that the 50% entrance fee is too high, especially when results of the research will not be exclusive.

The projects are in the fields of advanced microelectronics, software technology, advanced information processing, office automation, computer integrated manufacturing and information exchange systems, and are designed to obtain the long term critical mass to enable Europe to become a world leader in information technology.

French companies and institutions are taking part in 20 projects and Italian ones in 14. Luxembourg is not represented, and both Greece and Denmark are represented on three projects each.

Other British companies taking part include SDL, Scicon, British Leyland Systems, British Aerospace Dynamics, and BPA as well as the major companies ICL, Marconi, Logica, STC, and STL. Universities taking part are Southampton, Newcastle, Sussex and Strathclyde as well as Queen Mary College, London.

Social Security plans may create more jobs

by George Black

MORE jobs will be created than destroyed by computerisation of Social Security over the next two years, DHSS managers have told the unions.

Officials project that though 600 people would become surplus to requirements in that time 800 more posts would need to be filled.

The announcement was described by an official of the clerical union, the Civil and Public Services Association (CSPA), as "ironic".

The jobs lost would be mainly in the CPSA, which had recently voted to endorse the 20-year Operational Strategy. The middle managers' union, the Society of Civil and Public Servants, which opposed the plan, stands to gain most of the new posts, according to CPSA spokesman Tony Ledgerton. The 20-year plan for computerising the Department is estimated to cost £700 million and could axe up to 25,000 jobs. And it is hinted that an artificial intelligence project included in this strategy could be run by the Alvey programme as one of its "demonstrators". The DMSS has been described as an ideal subject for the exploitation of expert systems.

Unions and management are due to meet shortly to try to agree a programme of modernisation within the two year "truce" period up to the end of May, 1985. Ledgerton said this would be difficult as micros had already been introduced "administratively" – without their agreement – and officials had refused to halt their trials while consultations were held.

Management has introduced micros into Basingstoke and Swindon local offices for trials on handling of supplementary benefit claims. These studies have been going on for about a year with the assistance of non-union members and members who dissent from union computer policy.

Twelve other offices – two in each region – are to get the Equinox machines by the end of the year, the Department says.

Ledgerton commented: "We are likely to find far more of our members' jobs threatened over the long term and we'll seek to negotiate a further agreement with the management before May, 1985."

SCPS spokesman Paul Hammond said it had been forced by the CPSA decision to fall in line for the next two years.

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CW/8/83

Russians say Nyet to robots

by John Riley

RUSSIAN workers are resisting robots, there are problems with back-up and maintenance, and the machines are not getting to the factories quickly enough, according to official Soviet reports.

Robots set too hard a pace, and do not adapt to drunkenness and laziness on the shop-floor, says *Pravda*. That is why there are growing reports of "accidents" to them.

Factories are also finding problems in receiving back-up and maintenance, with the result that industry is slow in introducing robots.

About 8,700 Soviet robots were produced in 1981 and 1982, claims the Institute for Eastern market Research in Hamburg, but nearly 2,500 of these are still in storage.

The planned production this year is 7,700 robots, and most of those seem destined for store sheds. The total number of robots in operation in the Soviet Union is about 6,000.

"The Russians may be more on the learning curve than we are", said Tom Brock, executive secretary of the British Robot Association.

"It is a case of history repeating itself. When robots were introduced initially in the US at plants such as Ford Motors, they were physically sabotaged until the workforce understood them", he said.

"After two years, the workforce was pinning "get-well" cards on to the machines when they broke down", he added.

Brock was not surprised by the numbers of robots in storage: "It is normal to stockpile robots, just as you do with cars. Any robot supplier can provide them off the shelf."

BROCK . . . "A case of history repeating itself".

Top news agency for public database

by George Black

DATASOLVE, one of Thorn-EMI's information technology subsidiaries, will add one of the world's largest news agencies to its public database in October. And there are plans to build two more databases with the help of Industry Department grants under Information Technology Minister Kenneth Baker's new initiative.

Last month Baker announced that £5 million would be pumped into the development of public databases.

Datasolve is just completing negotiations for Associated Press to be put on to its World Reporter service, which now has over 40 customers worldwide. So far it receives BBC reports from over 120 countries and *Economist* briefings which are transmitted live 16 hours a day.

Managing director Chris Wood sees innovations of this kind as the biggest expansion area for computing service companies.

"Specialised bureau services, software and computer education will continue to provide solid profits," said Wood, "but for information services the possibilities are infinite. And they won't be threatened by the micro."

Datasolve sent a "raiding party" to the Online Exhibition in New York in April to test out the US market and now has 10 American customers, with 200 potential leads. Among the subscribers are six British government departments, ten European multinationals and one firm in Australia. World Reporter went live in January after a £600,000 investment in research with the aims of mainly serving the media. But it soon found that the range of data would need to be broadened if it was to make its mark.

WOOD . . . "Possibilities infinite".

Talks are now being held with ten other data sources, centring on Fleet Street organisations.

"We hope to put all the quality UK Press on to it in the near future," said director of information services Jim Ducker.

He made a "conservative estimate" of £10 million a year from the UK within five years, but added that they did not yet know what people were prepared to pay for information.

"A lot depends on what is the critical mass of the database".

The base is growing at the rate of 90,000 words a day. The limits are sources and expertise. In the US it will compete with Meade of Ohio's Nexis, which entered the arena four years ago and recently added the *New York Times* to its facilities.

The other problem is that it is virtually impossible to recruit people with electronic publishing experience.

A similar news service called Iris, which had former Prime Minister Edward Heath's blessing, failed even before launch in January.

Scicon tries its luck with 13th comms system supplier

by Donald Kennett

SCICON'S communications division has signed up a 13th system component supplier to fuel its continuing growth in international markets.

The supplier is the US-based peripherals and communications interface maker Emulex, whose CS-11/F communications multiplexer provides up to 48 ports into Digital Equipment Unibus-based processors at a cost of between £4,000 and £10,000.

The international strategy is based on a switch in emphasis from specialised consultancy and contract work to product sales, which the company is applying across all divisions following a simplification of its organisational structure last year.

Communications sales manager Roger Croft said product sales currently accounted for 10% of turnover, but this would be increased to at least 40% by the end of the decade.

"Selling standard products is the only way to get growth," he said.

Having built up its hardware and support experience through installing and maintaining bought-in boxes in system configurations, Croft sees another future shift being towards software.

His division has already written a range of emulation products to support communications between IBM mainframes and DEC processors via the KDX-11 Unibus to IBM channel interface which is made by DEC for Scicon.

It has also developed a telex converter and a remote monitor and controller for the Micom Micro 600 data PABX by writing software for the Micom Orange Box communications processor.

Croft said: "Our current belief is that communications is becoming much more software driven and that Scicon will become involved in producing software products to put on the back of bought-in hardware."

Hardware and software products will in future be produced or procured with an international market in mind. The company has subsidiaries in the US, West Germany, France and the Middle East, as well as the UK, and these will increasingly handle the same product lines so as to maximise the return on the company's involvement in each one.

"Today we are five domestic operating companies — one in each country," said Croft, "But the holding company's policy now is to do product development so as to make it international.

Scicon's strength lies in the breadth of its experience, according to Croft. "The company has 600 technical staff with experience of a wide range of equipment and this is treated as a common resource," he said. "We are able to supply a wider range than the normal communications supplier and to go closer to the mainframe because of our systems background."

Communications division has 90 of the company's 3,500 total staff and produces £5 million of its £110 million turnover.

CROFT . . . "Selling standard products only way to get growth".

SALES BRIEF

Amdahl takes off at Heathrow

PLUG-COMPATIBLE mainframe maker Amdahl has scored a £1.5 million order from British Airways for control and disc storage units. The delivery will provide 40 gigabytes of storage for use in both time-sharing and batch applications on the airline's two computer centres at Heathrow and West London.

BA has been an Amdahl user since 1978 when it ordered five 470 IBM-compatible mainframes.

Varsity Vaxes

DIGITAL Equipment has picked up two big orders for Vax minis from colleges of the University of London. The London School of Economics is taking two Vax 11/780s, top of the range, for statistical calculations of sociological data, and Birbeck College will get one of the mid-range models, the Vax 11/750 as a front end to the University's Computing Service, and the bottom range 730 model for the geography department.

£30,000 hat-trick

DATA Sciences International, the Leeds software house which is one of ICL's Business-29 scheme partners, has made a hat-trick of sales totalling £30,000. The deals involve order processing programs for Time Assurance Society, Oldham and Dolphin Showers, Worcester, as well as accounting modules for hatters Christy of Stockport.

French rights

ATS Communications has cleared the way to win exports worth at least £250,000 following a deal with Paris-based communications firm Periferic. The deal gives Periferic distribution rights in France for ATS' electronic communications equipment including the Vitel terminal which links the telex network with an office computer.

Prime agreement

PRIME will supply Benson peripherals as part of its own systems in Europe following the signing of a marketing agreement between the two companies. The value of the sales is expected to be worth £1 million in the UK alone in the first year of the agreement which covers the whole of Europe.

Robot contract

FERRANTI has supplied a computer engineering installation to Unimation, one of the world's leading makers of industrial robots, after beating off UK and US rivals to the contract. The system, called CAM-X is based on the DEC Vax mini and has been installed at Unimation's Telford plant.

Matter of record

SCOTLAND'S largest trade union for teachers has gone to Computer Technology to replace an existing system for handling the records of its 45,000 members and word processing of reports, accounts and minutes of meetings. The Educational Institute of Scotland will have software to run on the new system written by Beecom UK.

Colour comms

COMPUTER AUTOMATION, the US-owned, Dublin-based maker of communications systems, is buying £150,000 worth of colour videotex terminals from Cameron Communications. The terminals will form part of CA's Intelligent Concentrator package to link viewdata terminals to an IBM mainframe.

Army order

THE US Army has ordered $1.5 million worth of data switching equipment from T-Bar, the Connecticut maker of communications systems.

COBB . . . "Copiers pay us a compliment."

Apple wins injunction against UK lookalikes

by John Riley

LAST week Apple won two more rounds, one in the UK and the other in Taiwan, in its worldwide battle to stamp out lookalike Apple II micros.

In the UK, Apple Computer was awarded a High Court injunction to stop Sirtel (UK) from dealing in an Apple II lookalike, the Microprofessor II micro, made by Multitech Electronics in Taiwan.

The injunction will stay in force until Apple's case for infringement of copyright is heard.

The case focuses on the ROMs which allegedly contain copies of the Apple's operating programs.

The injunction means that Sirtel cannot return its stock to Taiwan, and it has to let Apple inspect any new ROMs put into Microprofessor II micros.

"The fact that everybody wants to copy Apple II is a compliment," said Apple UK managing director, Peter Cobb.

"We have adopted a definite pattern. If someone is selling copies we write to tell them to stop, and if they refuse we take legal measures. If people push us to take action we will do that and do it again and again."

Cobb added that copying in the UK had built up to be "a source of aggravation", and that there were a "number of discussions going on now with other companies".

In Taiwan last week, the High Court decided to allow Apple to proceed with charges against two Taiwanese companies.

The decision overruled a Taipei District Court judgment last March that Apple could not bring charges against the companies as it was neither registered nor had an office in Taiwan.

The charges, again for alleged infringement of copyright on the ROMs of Apple II lookalikes, were filed last September against Sunrise Computer Services and Golden Formosa Company.

Last October, Apple successfully stopped a Dutch company, CAB Trading, from selling Apolo II, an Apple II copy from Sunrise Computers.

In September last year, Apple also sought Hong Kong court orders restraining Lux Electrical and Maxland Electronic, both of Hong Kong, from infringing British letters of patent and rights.

Writs fly after boardroom row over cashflow problems

Quest company calls in receivers

by Caroline Burgess

QUEST CAE has called in the receivers following a boardroom row involving chairman Saad Gabr. The row centred on money owed to the UK firm by other companies connected with Gabr.

Writs were issued last month, against companies alleged to be owing a total of £250,000 to Quest CAE. Cashflow problems then forced the directors to ask Barclays Bank to call in the receivers.

Also put into receivership were Quest Automation Service, Quest Automation Research, Genesys and Quest Group International (the holding company of overseas subsidiaries).

The move comes just seven months after £2 million was put into Quest CAE in a deal between Quest Automation and the Arab Research Development Trust.

The deal split Quest CAE from Quest Automation as 51% of the former's shares were bought for the trust by two of Gabr's companies – Gabraphone Transducers and United Technologies Massawippi UK.

The two companies have since increased their share in Quest CAE to 61%. They are not companies against which writs have been issued.

Over 300 jobs are put at risk at Ferndown, Dorset and Royston, Herts.

The joint receivers Maurice Withall and Ipe Jacob, said that a large number of companies had expressed interest in buying all or some of the company as a going concern. They were hopeful that the business would survive.

Quest CAE is one of Europe's largest makers of CAD-CAM equipment and one of the world's largest suppliers of photo and pen plotters for computers.

The company has a turnover of £7 million, of which £4.4 million come from exports.

The company's equipment has been installed in all major countries.

Losses of £1.68 million were reported by the companies for the six months ended August 1982. In the same period of 1981 losses were £1.46 million.

Quest Automation's share price dropped 6p to 24p on news of the appointment of the receivers.

But Quest Automation directors insist that their company is trading profitably at present.

BT signs travel contracts

by Philip Hunter

A COMPREHENSIVE computer system for travel agents will soon receive a nationwide push by British Telecom's Merlin division, which was set up to promote office automation products.

The Modulas system was designed by ABTA, the Association of British Travel Agents, to cover all computing needs of the retail travel agent. BT is signing two multi-million pound contracts with Scottish Future Technology Systems (FTS), which is supplying the hardware, and Tourism Technology (TTL), which is supplying the software.

The product has had a bumpy ride to market. It was first announced in November 1981 as a development project by the Canadian company Caltrav with ABTA's support, and Logica to develop the software.

Caltrav went into liquidation last year, and the product was rescued by FTS and ABTA.

Modulas will be sold by BT's Merlin division for an entry level price of about £8,000.

Derritron Group Limited — an apology

IT has been brought to our attention that the report contained in our June 30 edition under the heading "Soviet trade ban hurts UK houses" contained statements referring to Derritron Group Limited and its business which were erroneous and misleading. We apologise to Derritron Group Limited and are informed that:

1. The statement that Servotest went into a crisis meeting with its Hastings-based parent company Derritron concerning its failure to obtain shipments of computers for export to Eastern Europe was untrue and without foundation.
2. Servotest, which is a division of the newly formed Derritron Group Limited, has not since its inception in December 1982 attempted to purchase or even considered purchasing computers for export to Eastern Europe;
3. No other orders or co-operation agreements have been held up or are "hanging fire" as a result of any sanctions due to the Soviet invasion of Afghanistan.

Bryn Dando, the managing director and chairman of the holding company, Derritron Holdings Limited, has informed us that his company was set up with the aid of finance from City institutions to acquire certain assets from Derritron plc which went into receivership in October 1982. While the new trading company, Derritron Group Limited, operates in the names of Derritron Electronics at Hastings, Servotest at Greenford and Team Corporation in California, USA, selling a similar range of products to those of Derritron plc, he has stressed that there is no link either in terms of trading or management between Derritron plc and Derritron Group Limited.

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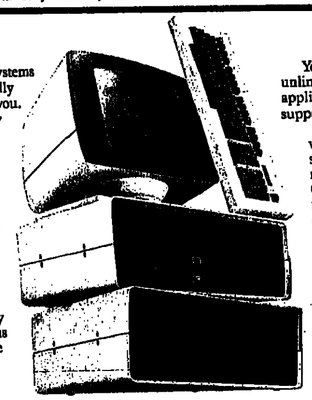

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LMS

Report says IT upsets East-West stability

by Howard Karten

INFORMATION technologies are driving the strategic balance of power between the free world and Communist countries to an unstable state, a new report asserts.

By making weapons more accurate and improving battle field communications, military planners have higher confidence in their weapons, according to report author Daniel Deudney, a senior researcher at the Washington-based Worldwatch Institute.

Duedney's report, *Whole Earth Security: A Geopolitics of Peace*, released in Washington last week, asserts that developments such as improved sensory technology, communications technology, and information processing technology per se, are destabilising.

As an example, Deudney asserts, the computers that form the guidance system for the cruise missile enables it to fly at low altitudes unerringly to its target.

Another example is satellite reconnaissance, which can provide information to target mobile forces or do damage assessment, turning satellites into tools of war.

According to Deudney: "Communications technology has been exploited by the military and has created the idea that you can have a protracted or limited nuclear war because you can keep tabs on all your dispersed forces."

However, the information technologies that lead to greater instability could be used as the foundation of an alternative security system. For example, information technologies could be used for a more comprehensive arms control verification system. The key thing is for geopoliticians to make the political decisions necessary to use the technology in positive ways.

The Worldwatch Institute is a non-profit research organisation that does studies on a variety of global issues. The organisation is pragmatic, rather than liberal or conservative, Deudney says, and has friends as well as enemies on both sides of the political spectrum.

Half the institute's support comes from the sale of reports such as the present one, with the remainder derived from contributions from various foundations.

FISHER . . . Rehosting York Ada compiler on the Vax VMS operating system.

Software Sciences SPL deal gives Ada the world

by Philip Hunter

THE first full Ada compiler developed in the UK will be marketed worldwide next week following announcement of a joint deal between Thorn EMI subsidiary Software Sciences (SSL) and SPL International.

The compiler was developed at York University for the Digital Equipment Vax mini with the aid of a grant from the British Technology Group.

Marketing rights for the compiler were taken over by the BTG after a dispute with the university that arose when it was realised that the compiler had greater commercial potential than expected.

The BTG is granting exclusive licences for the compiler to SPL and SSL. "We will be rehosting the compiler on to another operating system," says Jim Fisher, SPL's managing director.

At present the compiler runs under Unix, but SPL will put it on the VMS operating system, which will give the product more clout in the US.

SPL will sell the compiler in the US through its agents there, while SSL will use the Boston premises recently acquired from the Italian Altergo empire as its American base for the product.

The US campaign will be strengthened if the compiler is successfully validated by the US Department of Defence, which sets standards for the language through ANSI, the American National Standards Institute.

The first full ANSI standard was announced in February, and since then the US military hardware specialist Rolm has become the first to have a commercially available compiler validated by the US DoD.

Like Rolm and another US company Western Digital, York University has been trying to progress the ANSI standard while developing its compiler.

Unlike Fortran and Cobol, Ada was given an ANSI standard before there were full working compilers for the language. The move clears the way for the language to become established for a variety of real time applications.

October is time for low-cost VisiOn

by Claire Gooding

THE long-awaited Vision operating environment arrives in October, with an unexpectedly low price-tag of £1,200.

VisiOn is the first attempt to bring the concept of using "windows" on a screen to low-cost machines. The software will be available in the UK in the first week of October, and is initially targeted at the IBM personal computer.

VisiCorp teamed up with Xerox, originators of the window idea, earlier this year, to develop a wider range of applications for VisiOn. The £1,200 VisiCorp is asking for VisiOn includes the basic VisiOn environment, the "mouse" controller for the cursor, and three applications packages; graphics, word processing, and a spreadsheet.

Viscorp first made its name with the spreadsheet package VisiCalc, but now concentrates on promoting a whole family of business software products.

The VisiSeries family includes VisiCalc itself, VisiTrend/Plot VisiFile, VisiWord, and VisiSpell, with VisiSchedule on the horizon. VisiCorp is concentrating on separate implementation of its products for the three environments PC-DOS, VisiOn and XT.

VisiCorp denies suggestions that there are any problems involved in upgrading the basic PC program to run on IBM's hard-disc XT. The company has just launched the VisiSeries software with hard-disc support, and according to Helen Johannsen, who handles Visicorp'sInternal Sales in the UK, it was a simple process which encountered no snags.

Peace protesters win publicity

by Caroline Burgess

PEACE pages on Prestel mark the beginning of a computer network to promote the aims of peace and disarmament. Behind the scheme is the Peace Network, a group formed two years ago in America by the Union of Concerned Scientists.

The peace pages will be compiled by Sabine Kurjo, Peace Network's founder and co-ordinator, who explained. "They will consist of five categories: who is involved, activities, forthcoming events, contacts and news."

This facility became available on August 6, Hiroshima Day, and was published at an open-air festival organised by the Greater London Council.

Sabine Kurjo was approached by the Association of London Computer Clubs (ALCC), a group to promote the use of computers for recreation, which offered Peace Network the use of Prestel and Micronet free of charge.

Peace Network has 30 members, based in America, and has held electronic conferences via the American network BIBS Electronic Information Exchange System.

As yet computers have not been networked for peaceful purposes outside of the US. But Peace Network has contacted a large number of organisations worldwide. The eventual aim is to form a global network to supply information and co-ordinate campaigns.

Peace Network hopes to bring together people who work for peace and do not know about computers — and those who know about computers but not about the activities of peace campaigners.

BT team wins £1,000 prize

by Donald Kennett

THE effective way that a seven-man British Telecom design team solved the problem of joining optical fibres in the field has won its members the £1,000 national prize in BT's first Fit For Purpose competition.

The jig designed by engineer Ron Smith's team at a headquarters establishment in Wembley aligns monomode fibres to an accuracy of less than one micron, before welding the two ends with a high-voltage electric arc.

An effective and economical method of jointing optical fibres is an important element in accelerating their installation. The prize-winning jig was a world first and it has already been put into service in several other countries as well as the UK.

Optical fibre cables are already more economical than copper ones for long-distance telecommunications and they are expected to replace copper on all routes in the late 1980s.

A further advantage is that their carrying capacities can be considerably expanded after they are installed, by future improvements in the design of the interface devices at each end.

The runner-up, who won £500 each, were the two-man team that marketed the Skytrack airline reservation service on Prestel and the five-man team in Cardiff that designed a micro-based device to prioritise the fault data produced in tabular form by the MAC management analysis centres which are attached to telephone exchanges.

COMPANY PROFILE

Amdahl nears El Dorado

by Kevin Cahill

THERE is a growing consensus in the US, backed by huge sums of money, that Dr Gene Amdahl and his son Dr Carl Amdahl have discovered a semiconductor El Dorado.

Last week Digital Equipment Corp, the US's number one computer company in terms of engineering excellence put up $26 million for a share stake in Trilogy, and an option to use the new wafer level, water cooled, super chips in future DEC products.

In addition, DEC has reached a tentative agreement with Trilogy to set up another semiconductor plant, in parallel with the existing plant, which is intended to supply material for the new Trilogy range.

The agreement with DEC is substantial, but is the third such deal so far announced. The previous ones are with Cii Honeywell Bull in France and Sperry in the US. Each of the companies has a stake in Trilogy, and a right to licence the technology for use in their own products.

Both Trilogy and its investors have been careful to conceal the relationship between the sums subscribed by the outside investors and the price paid for the Trilogy stock.

The reasons for this are fairly straightforward.

Trilogy is now in its second round financing, when the venture capitalists would normally be expecting to draw a little blood by way of cheapening the shares.

This hasn't happened, at least in part because the industry itself recognising the potential of what the Drs Amdahl have done, has stepped in and provided most of $100 million second round money, at better terms than the financiers would offer. This is because there is far more in the deal for DEC and Sperry than there would be for the financiers.

The intriguing question is whether Nixdorf, which has had long and close contact with Trilogy, will go ahead and invest.

If this happens that would appear to just about close the second round with Dr Amdahl still holding around 50% of the stock of a company which appears to be valued at around $250 million.

On the assumption that Trilogy meets its first year sales targets of around $500 million, and then goes on to hit the $ billion in year two, with profits around $100 million, those now paying $20 million for 9% of Trilogy could find their stake worth $160 million or more based on conservative share price of 16 times annual earnings.

Trilogy is likely to need just one further round of about $100 million to get the product into customer sites and finance the order book in year one. At that stage, provided that there are no serious hitches, the Dr Amdahl should be in a powerful bargaining position with the financiers.

The licence rights to the technology should provide a basic cushion of revenues, and the order book itself should have begun to fill out by the time the next round comes up.

Ken Olsen the founder of DEC and its current president described the Trilogy technology as "unique" and an "important breakthrough."

Those are plaudits very similar to those heaped on Trilogy by Sperry president Gerald Pabst and represents advised opinion from some of the sharpest engineers in both companies who had examined the early production chips from the Trilogy plant.

The chips themselves are about 3cm by 3cm and carry between one and two million components each.

The basic semiconductor technology is emitter coupled logic and the modules Trilogy itself is planning to use are water cooled.

When first shown to *Computer Weekly* in February this year, the chip represented the most advanced wafer-level fabrication ever achieved.

Texas Instruments some years ago tried and failed to achieve wafer level fabrication and attempts at full scale fabrication are in progress in several US and Japanese companies, so far without achieving the break through into production that has occurred at Trilogy.

So far Japanese reaction has been muted, but Sumitomo has concluded an agreement with Trilogy to sell the new mainframes in Japan. It is unlikely at this point that Trilogy will enter into formal agreement with a Japanese company at technology level, since all the Japanese computer builders except Oki and NEC are building IBM plug compatible machines which would compete with Trilogy's own product.

AMDAHL . . . Still holding 50% of Trilogy pot of gold.

MICRO NEWS

SHERMAN . . . "Not particularly worried."

Dealers have hard time despite micro boom

THE micro business may be booming, but the business of being a micro dealer is not holding up so well. Another microcomputer dealer — A-One Computers of Sutton — has gone into receivership, following last week's news of Datalect's troubles.

Chartered accountants Thornton Baker — which has been thriving on computer company receiverships lately — was called in by A-One's principal backer Investment in Industry last week.

A High Court ruling the previous week awarded Rank Xerox, one of A-One's main suppliers of micros, around £35,000. The directors of A-One took advice, and decided to shut up shop, dismissing staff.

Now Peter Beirne, the receiver from Thornton Baker, and Chris Ashurst, also from Thornton Baker and managing the business, are trying to find a buyer for the company. As well as Xerox kit, A-One sold Apples and Siriuses, turning over £350,000 last year.

"We are really doing a salvage job," says Ashurst, "because all the staff were sacked, and there were several days when no-one was answering phones or anything, we have to work very fast. We are seeking to sell the business as a whole, and are expecting some offers this week."

According to a Xerox spokesman, the troubles between Xerox and A-One were basically over bad debts. The money awarded by the court represented the Xerox stock that A-One had sold. The total owed by A-One to Xerox was considerably more, but there was still equipment in stock and unsold.

Micro dealers have come and gone ever since people realised the profits that could be made out of shifting boxes to eager customers and then fading away before after-sales service and maintenance of the installed micros was needed.

But because the business has developed, and the dealers are getting bigger, firms hitting trouble are making bigger splashes.

"I am not particularly worried," says Ed Sherman, managing director of distributor and manufacturer ACT (Sirius), "because we vet all our dealers well."

In the whole of last year Sherman says only three or four of his dealers hit bad trouble, but the rate is speeding up. "Three or four have gone down in the past couple of months," he says, "and they are longer-established ones, with good business relationships and numbers of customers. That hurts."

He reckons that a lot of the problems come from dealers panicking when new companies crop up offering big discounts to end users. He cites London-based EOS as an example of such a price setter, with the large discounts it offered on grey imports of IBM PCs. EOS itself hit financial trouble earlier this year, and went into receivership in April.

And Russ Nathan, of market research company Romtec agrees. "One of the fundamental problems is that people are trading too much on price. They leave themselves exposed on the service side."

Nathan has just published a directory of microcomputer dealers* which lists and analyses companies trading in business microsystems.

"We found about one in five of the huge list we had did not answer the phone. They just weren't there any more. And we had hundreds of letters returned by the Post Office."

**1983 Directory and Analysis of Microcomputer Dealers*. Romtec, 75/77 Victoria Street, Windsor, Berkshire, SL4 1EH. Tel: Windsor 51550. In two volumes, £595 each volume.

NCR puts its faith in Dundee workers

by Caroline Burgess

NCR is to build its 1632 computer at its Dundee plant from the last quarter of this year.

Jim Adamson, general manager of the Dundee plant, said he was delighted by this commitment of faith by the company to the Dundee workforce. He added that it will help to ensure employment and form a base within the EEC for European sales.

NCR chairman William Anderson said: "The Tower 1632 can operate as a complete stand-alone data processing system for a small business, or as a special-application system in larger companies. Its power, flexibility and communication capabilities make it an ideal system for distributed application."

The Tower is a high end micro built around the Motorola 68000 processor.

It has Multibus input/output sub-system and an operating system derived from Unix. This makes a wide range of hardware and software available to end users.

Production will continue in Columbia, South Carolina, where the Tower was developed.

Health care is Chained

by Caroline Burgess

IMPROVEMENT in health care is promised with the introduction of a new message handling system from British Telecom Merlin.

Called Chain (Community Health Advanced Information Network) the system is based on a microprocessor-controlled terminal from Acorn.

It will be introduced in the south-east of England, but the aim is to provide a nationwide service. It is hoped that it will provide a comprehensive service covering all aspects of the health service.

Its uses will include the sending of patient referrals and the ordering of hospital supplies. It will offer access to a large database containing information on things like the use of drugs.

Chain has been designed and developed by Hallahan, Ingram and Associates of Henley-on-Thames.

Acorn announced that it will be moving into OEM for other large corporations. The Chain system is Acorn's first OEM project. Sales director, Peter O'Keefe explained the move by saying that its research, development and manufacturing experience will give "the perfect foundation" for companies to brand their own equipment.

Plans to increase production of its BBC microcomputer from 18,000 to 25,000 a month from September and the launching of a new home computer, the Electron, were also announced.

The Electron will be priced just under £200. Production is expected to reach 100,000 by the end of the year.

Professionals get CP/M

DEC PROFESSIONAL micro users can run eight-bit CP/M software thanks to a plug-in chip from Bristol-based Zeta Systems.

Its Z-chip, a custom gate array plus a Z80 processor die, is packaged to plug into the floating point socket on the Professional board, and runs the Bridge software which allows program and data interchange between the host DEC system and CP/M.

The Z80 in the Z-chip is hidden from the micro's F11 processor — an 11/23 processor reduced to a single chip — but can read and write the host memory when activated by an otherwise unused floating point instruction. The Bridge software passes all I/O from the CP/M system to the host operating system.

Software included with the Bridge system — which in other forms enables Vax and PDP-11 users to run the extensive library of CP/M applications — allows DEC Professional users to run CP/M as another normal job as far as the host processor is concerned.

It has utilities to allow the machine to read and write floppies from DEC's other micro offering, the dual Z80/8088 processor Rainbow, and to transfer files between the host operating system and CP/M.

Micro News is compiled by Robert Parry

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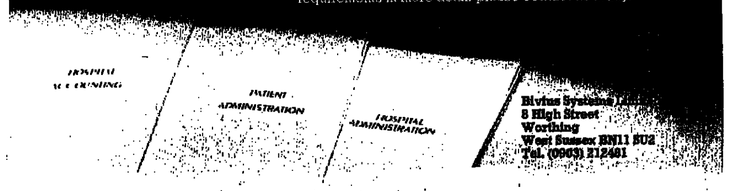

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(CW/8-83)

SOFTWARE FILE

Apple II users get more licence

APPLE is licensing a new disc operating system to applications developers. It is called Prodos and is aimed at providing Apple II users with greater scope for storing networking, graphics and database programs as well as closer compatibility with the Apple III.

Pascal rights

CARLETON University, Ottawa, has won worldwide marketing and development rights to Honeywell's Pascal language, which runs under the CP-6 operating system. The agreement means the university can license software to 50 CP-6 users, including the universities' authority UCCA. Carleton developed CP-6 Pascal as part of a $450,000 contract with Honeywell in 1979.

Circle deals

CICS SPECIALIST Circle of Gerrard's Cross, Bucks, is to distribute a store-and-forward telex manager for IBM mainframes called Vortex on behalf of its Dutch author Van Leeuwen. Circle has appointed Credit Lyonnaise's offshoot Sligos of Paris as its European agent and now also has representatives in Australia and Israel.

DEC extension

DIGITAL Equipment is extending its classified software programme to its personal computer family. A sponsorship scheme will encourage package writers to migrate to its machines. The list of DEC-approved products is to be increased at the rate of 10 applications a month.

Wicat emulator

US MICRO maker Wicat has released an emulator package to let programs written in Datapoint Databus code run on its own machines. The Datacat system, allowing Databus source and object code to run on the 150, 155, 160, 200 or 220 micros, is aimed to attract the 10,000 committed Databus users to what Wicat claims is more cost-effective hardware.

Standards

CONVERGENT Technologies, US maker of the distributed workstations with OEM agreements involving Burroughs, NCR and Thomson, is now running industry standard MS-DOS and CP/M-86 operating systems hosted by its own CTOS. The move will put a wide range of applications at the disposal of users.

Scicon service

THE Greater London Council's Acompline database is offered as a bureau service by BP subsidiary Scicon. Acompline covers the GLC's research library on urban affairs and complements the parliamentary online information service Polis. The databases are held on Univac 1100s at Milton Keynes.

Micro directory

A MONTHLY micro software directory is to be produced by the National Computing Centre. The NCC Microsystems Centre says the market is changing so fast that in four weeks during the spring five financial modelling systems were launched and three others withdrawn.

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KING . . . "People think version 7 is System III."

Mass production Unix is coming

THE Unix multi-user operating system is on the verge of mass production, according to top UK systems house Logica, which has released version 3.0 of its Xenix lookalike. Logica is second source for Microsoft's Xenix in Europe.

This version is claimed to be a full implementation of the 1980 Unix System III standard laid down by the owners, Bell Labs. Tailored to 16-bit micros, it allows data files to be ported from machines running under Microsoft's single-user operating system, MS-DOS.

A visual shell has been developed to shield the non-expert end-user from the guts of the complex software. And there is an interface for hand-held mice and an upgrade of the previously rudimentary electronic mailer.

Documentation has been completely re-written by Microsoft technical authors in the US over the past year, preparing the way for the mass market.

First micros to get it will be the Motorola 68000 chip machines – in the US Apple's Lisa and Tandy's Model-16, in the UK Plessey System 68 and Tycom's Microframe. The aim is to put the new version on to all the major 16-bit machines, including the Intel 8086/88s, NatSemi's 16032 and Zilog's Z8000.

Logica also wants to port it to ACT's successful Sirius and the new Apricot. Licences will come in three parts – for the basic time-sharing systems with kernel and standard utilities; for the software development system for specialist programmers; and the text processing system.

OEM services manager [illegible] King said: "Lots of people [illegible] they've already got System [illegible] they're really still using [illegible] and don't know it."

He said the latest offering [illegible] Californian rival Unisoft [illegible] had seen were still essentially [illegible] sion 7. Unisoft's British [illegible] Root Computers claims that [illegible] Xenix which is version 7 [illegible] own Uniplus is System III [illegible] says it has already done more [illegible] 40 ports to 68K machines.

Logica also supports Xenix [illegible] DEC's PDP-11 minis and [illegible] Canadian Unity product on [illegible] Vax. Bell Labs has in the past [illegible] supplying Unix for DEC [illegible] ment but has been restricted [illegible] political factors which [illegible] Unix with academics.

Failsafe Stratus signs Oracle

by Claire Gooding

A NEWCOMER on the failsafe scene, Stratus Computers, has announced a deal with relational database firm Oracle. The deal will give the manufacturer a useful edge over other competitors, as well as confirming the IBM slant that Stratus has so far taken in its software policy.

Oracle has long claimed to be the only true relational database commercially available and boasts 300 users worldwide. It uses the database query language SQL (sometimes known as Sequel) which was first developed by IBM.

Oracle has gone further down the path to supply true relational facilities than most other so-called relational products.

Its deal with Stratus includes the SQL-based "database engine", the report writing and programming language interfaces, and the forms generation facility.

"The problem that Stratus had was that most relational databases are tied to a particular operating system," explained Oracle's head of communications, Kathryn Gould. "There are other relational databases, like Ingres, which uses Unix, but it isn't as portable as Oracle.

"If Stratus were after a truly multi-user relational database there really wasn't any other choice." Like Ingres, Oracle is written in the portable Unix language C.

Stratus itself is to port the Oracle database to its own operating system, and will customise applications and utilities.

Stratus will keep the Oracle name, and according to Stratus product marketing director, Nicholas Bologna, the product will form the basis of all future database strategy.

Stratus was launched in February 1980 in direct competition to the well-known failsafe manufacturer Tandem and British manufacturer CTL which had dominated the market for parallel-running systems.

The market for failsafe systems has since hotted up considerably, with the arrival of Synapse Computer Corp as well as Stratus.

Database brings nurses together

by Claire Gooding

NINE separate nursing authorities have been brought under one umbrella in a huge national database project for health workers called Sprint-UK. The database deals with 1.3 million nurses, midwives and health visitors comprising over three million records.

The new system reflects a major streamlining in the organisation of professional bodies in nursing and midwifery. The Central Council took over on July 1 this year from the nine separate bodies previously responsible for training and professional standards and conduct.

The council now takes central responsibility for ethical and professional registration in nursing, supported by four national Boards of Nursing, Midwifery and Health Visiting, which deal largely with training.

The Sprint-UK project has been written largely by the bureau UCSL, using the Adabas database and its TP monitor COM-PLETE. Adabas' "fourth generation" end-user query language Natural has played a large part in providing online facilities.

"The main task has been converting all nine separate sets of records into one large computerised system," said the council's communications officer, Doug Walker. "Some of them are still manual card systems, so there's a long way to go. The time when they will all be run together – nicknamed The Scrunch – will be in late autumn 1983."

Each of the four new national Boards of Nursing, Midwifery and Health Visiting will have online access to the new database. Sprint-UK revolutionises administration for the professional and training authorities since they will for the first time have online access to central records.

This simplifies tasks such as keeping records of qualifications and registration up-to-date, as well as making it far easier for staff to move anywhere in the UK without re-registering with regional bodies.

The system will also send out statutory refresher course reminders and speed up the process of professional registration. The nurses themselves should find registration and administration easier as a result.

Sprint-UK is based on UCSL's IBM 3083 at Woking, and is planned to go live next spring.

Sprint-UK simplifies admin for midwives and health visitors.

Systematics fixes NEC personal deal

by Claire Gooding

ACCOUNTING software firm Systematics International has signed a deal with manufacturer NEC to put its packages on NEC's recently launched 16-bit Advanced Personal Computer.

The agreement follows another similar deal last year to supply CP/M80 business software for NEC's PC8000, and brings Systematics' NEC business up to the £250,000 mark.

The initial order is for 1,000 packages covering sales, purchase and general ledgers, financial planning, invoicing, stock control and job costing.

"The agreement is that all business accounting software supplied with the computer will come from us," explained Systematics founder and chairman Ron Young. "The PC8000 CP/M80-based software is already going very well, and this deal opens up even larger opportunities.

"NEC is predicting that it will take 10½% of the business microcomputer market next year – that's over 7,500 machines. We estimate that, while the initial deal is only for 1,000 packages, everyone who buys the computer will probably take two or three packages each, and that would bring our sales to the 12,000 mark."

YOUNG . . . "Significant."

Microsoft makes Japan more accessible

MICROSOFT's announcement of a new eight-bit low-end specification standard could give US and European software authors access to the Japanese home computer market.

The standard, called MSX, comprises Microsoft's M-Basic language interpreter, and several pieces of hardware, such as the Zilog chip, and instruction set, I/O ports, Texas Instruments video processor, joystick interface and ROM cartridge.

Fifteen Japanese manufacturers have combined on the project, which was the idea of NEC and Matsushita. The list includes Fujitsu, Hitachi, Canon, Sanyo, Mitsubishi, Sony and Toshiba. But Microsoft's director Scott Oki thinks the standard is likely to benefit US software authors more than the Japanese.

He doubted whether Japanese machines would be able to compete with American ones either on price or performance, though some might come on to the American market during 1984, he said.

US micro manufacturers are likely to ignore the standard or view it with caution as they are already heavily committed to their own designs.

Program writers like Sierra, Sirius, ACTvision and Spinnaker could be keener, seeing big opportunities for exploiting educational software and games niches in Japan.

First products under the new scheme are expected towards the end of the year. Oki commented: "MSX is not state of the art, it's simply a low end spec available to any company, should they choose to support it."

Common games cartridges such as Atari's were not MSX-compatible, he said, but could easily be converted if their makers chose.

Software File is compiled by George Black.

COMPANY NEWS

Amdahl figures double up

AMDAHL Corporation looks set to achieve what seemed optimistic forecasts by analysts last year, as turnover nearly doubles and profits soar.

Reporting for the half year ended July 1, Jack Lewis, Amdahl Corp president, showed sales of $352 million, compared with $216.5 million for the half year ended in mid-1982.

Profits were also positive, bouncing back from last year's poor $3.4 million to $13.8 million.

For the year as a whole, industry analysts are talking in terms of sales of around $800 million (1982 was $412 million).

Lewis made no forecasts in his formal statements, but is known to be hopeful that the company will make the brokers' very high expectations.

The second quarter, with sales of $180 million, nearly 100% up on last year's $106.8 million, gives the lie to the trend that was evident in the 580 order book last year, but which aborted when the final stage engineering problems emerged at the end of 1982 and prevented deliveries that year.

This year is also helped by the new memory and communications products which Amdahl Corp now has in delivery.

Cray profits halved

CRAY Research ended its second quarter with profits more than halved from last year and with lower sales.

The company reported revenues of $28 million for the June quarter, compared with $30.9 million for the same period last year.

The half year showed up a little better, benefiting from the buoyant first quarter, to yield sales of $55.5 million, compared with $54.2 million last year.

Cray Research specialises in building and supplying the biggest, fastest scientific computers in the world.

The company is currently developing a major new machine to succeed the Cray 2, which goes into delivery at the end of this year, and is also involved in developing a compatible range of vector processors based on the Cray 1/XMP line.

The company's revenues are vulnerable to even minor switches in dates and method of payment by customers.

Mohawk profits slide

MOHAWK Data Sciences (MDS) has announced year-end results which show sales and orders improving on last year, but profits sliding.

According to MDS chairman Ralph O'Brien the company made $363.5 million in sales revenues for the fiscal year ended April 30, compared with $333.9 million last year.

Orders, according to O'Brien, rose in terms of the backlog from $232.7 million to $266.8 million, a 15% improvement on last year.

But profits took a drubbing, falling from $15.6 million in fiscal year 1982, to $11.4 million.

O'Brien blamed a higher tax charge and a strong dollar for the drop 27% in profits.

MDS has been involved in a long and sometimes obscure repositioning of its product line and its corporate strategy recently.

The slow progress towards the kind of profit margins obtained by other DP industry companies has made MDS a focus for industry analyst criticism in New York.

The company will face pressure this year to bring in the kind of results its share price has promised, but which the company has been slow to deliver.

Voice storing is America's hot tip

THE well-worn cliche that where America leads, the world follows, is nowhere more true than in the field of computers.

And second only to the field of computers is the field of finance, and specifically the field of computer finance.

The American computer revolution owes as much to imaginative financing as it does to almost any other factor, and UK financial institutions, while laggards in getting involved in this country, were fast and early into the US computer industry.

Witness Abingworth's huge $25 million plus gain on Apple and Murray Technology's £700,000 gain on LSI Logic.

Institutions like these and many others rely on information sources in the US to guide them to suitable investments. A recent publication called *High Technology Reports* from American Investor Information Services illustrates the kind of well developed information supply which has made possible some of the spectacular US successes in the computer field.

While much of the material in the *High Technology* report is intended principally to guide new investors into the uncharted waters of the computer industry, the introduction also comes beefed up with a compilation of the latest trends and forecasts for the industry into the 1980s.

Those forecasts make more than just interesting reading.

By combining a series of forecasts from various sources some of the more glaring errors, mostly of hyper-optimism, have been overcome.

Not unexpectedly, the top growth forecast is made for one of the telecommunications sectors, that of voice-store-and-forwarding, which is expected to grow at the rate of about 165% to the end of the decade.

One reason for the very high growth rate is that the area is little developed. Only IBM and a few other companies offer ready to use systems, and at a very high price. This situation is not likely to persist with both Texas Instruments and NEC Corporation introducing micro-based voice input systems for their small business and home computers in the UK in September.

Second in the league of fast growers is electronic mail, which will grow at 145% a year, closely followed by local area networks, which are forecast to grow at a compound rate of 130% a year for the next six to eight years.

In the telecommunications equipment sector data PABXs are reckoned to have 84% a year growth ahead of them, while digital PABXs with voice switching will grow at rate of around 60% for the rest of the decade.

Down among the more run-of-the-mill DP sectors, the computer services is expected to grow at 26% a year, and hardware will grow at 22%.

The hardware component deserves reflection noting that last year, with the exception of Amdahl's late deliveries, all the non-IBM compatible suppliers showed negative or barely positive growth.

The 22% forecast combines all forms of hardware, from micros to mainframes, and incorporates a big allowance for price attrition in all sectors, but still comes out showing growth.

In the semiconductor area over the next four years, eight-bit microprocessors drop out of the calculations altogether, 32-bit microprocessors will grow at 106% a year and 16-bit microprocessors will grow at 52% a year.

The 256K Ram market is predicted to grow at 90% per annum, and the 64K Ram market at 40%. Memory devices below the 64K level, by implication, cease to be of any significance in terms of growth.

The reports cover other high technology sectors besides computers. The layman's guide will prove invaluable.

High Technology Reports from American Investor Information Services Inc, 1627 Spruce Street, Philadelphia, US. Tel: 215 732 5350.

US COMPUTER INDUSTRY
Total Industry Figures[1]

	1981	1982	1983-E	1986-E	% Growth/Year
Total Computer Industry	59.6B	69.26B	83.78B	147.57B	20.8%

(All figures in current US Dollars)
[1]Sources: Electronics, 1983 . . . Input Incorporated
E estimated
B billion

US COMPUTER INDUSTRY
Major Sub-Components

	1981	1982	1983-E	1986-E	% Growth/Year
COMPUTER HARDWARE					
Microcomputers	1.0B	1.3B	1.69B	3.7B	29.9%
Minicomputers	4.6B	5.45B	6.44B	10.47B	17.5%
Small business computers (less than 10K)	2.0B	4.0B	6.5B	20.0B	49.5%
Small business & scientific (10-20K)	600M	750M	975M	1.7B	22.7%
Small (20-100K)	1.0B	1.16B	1.4B	2.0B	14.6%
Medium (1M-1M)	4.2B	4.5B	4.9B	6.5B	9.6%
Large (Over 1M)	8B	8.5B	8.9B	12.2B	9.5%
CAD/CAM equipment	819M	1.15B	1.55B	3.5B	32.1%
COMPUTER PERIPHERALS					
Memory systems	817M	835M	923M	1.3B	11.2%
Data storage	2.68B	3.28B	4.29B	7.56B	23.2%
Input/output	3.46B	4.08B	4.8B	7.68B	17.1%
Data terminals	3.8B	4.55B	5.68B	11.4B	25.8%
Source-data	1.72B	1.84B	2.0B	2.75B	10.6%
COMPUTER SERVICES					
Processing	10.8B	–	–	21.0B	14.2%
Professional services	4.4B	–	–	17.0B	31.0%
Software products	2.15B	3.1B	7.2B	16.8B	50.9%
OFFICE AUTOMATION					
Copying machines	7.4B	7.32B	7.47B	8.12B	2.6%
Dictation machines	277M	289M	301M	365M	6.0%
Electronic typewriters	320M	410M	465M	770M	17.1%
Local area networks	125M	150M	250M	433M	30.3%
Word processing	1.66B	2.24B	2.87B	4.36B	18.1%

(All figures in current US dollars)
[1]Sources: Electronics 1983 . . . Input Incorporated
E estimated
K thousand
M million
B billion

French bank on IT lifebelt

by Jack Gee

EXPORTS by France's electronics, computer and electrical manufacturers rose by only 11.7% during the first quarter of 1983, compared with 17.3% for the same period last year while imports increased by 21%, the same rate as before.

The industrial federation which groups these activities says information technology will remain the lifebelt for its member firms. In its 1982 report, which has just been issued, the federation reports that turnover totalled 160 billion francs (£200 million) and increased in value by 13.5% (only 6.5% in volume) over 1981. But without information technology turnover would have gone up by only 11.6% in value and 3% in volume.

Andre Riviere, former managing director of Cii-Honeywell Bull (now known by the simpler title of Bull) and current president of the federation's association of information technology manufacturers, told *Computer Weekly*: "Our industry is one of the few which continue to hire more staff."

Riviere reports that 51,000 people are working in information technology in France and employment over the past five years has increased by 6,000 – most of the recruits being highly qualified engineers and technicians.

However, few firms in France's electronics and computer industry are escaping the effects of the world economic recession whose impact has been heightened in this country by a serious trade deficit and inflation running at 9% – over twice Britain's level.

Industrial sources point out that the outlook for 1983 is poor judging by performance during the opening months of the year. But 1982 now appears thanks to the federation's official figures, as worse than the most pessimistic economic forecasters had predicted.

Firms' operating expenses were increased by heavy social security charges, the introduction of a 39-hour working week and a fifth week of paid holidays for all employees. A price freeze which lasted between four and six months depending on the industrial sectors concerned, and the requirement that companies should shoulder the cost of 1% of increases in VAT, were a particularly serious burden.

In spite of three revaluations of the franc over the past 20 months, the French currency is still overvalued on its most competitive European market – West Germany, and financial servicing charges are particularly heavy.

Lucien Blanc, a vice-president of the federation and managing director of Merlin Gerin, told *Computer Weekly*: "Every time we sell in West Germany, we lose. When we buy from them we lose again on the currency exchange. The Germans are steadily setting up strong sales bases in France because they consider the franc is still too dear."

CCF has a half-year of sales success

EXPANSION overseas and booming business on the UK Stock Exchange have given specialist software house and system builder CCF massive sales and profit increases at the half-year mark.

CCF, which built up its business on the basis of offering standalone computer systems and software to stockbrokers, reported sales of £904,386 to June 30, 1983, compared with £478,161 for the six months ended June 30, 1982.

Profits, which had been dragged down in the first half of 1982 by the acquisition of loss-making payroll bureau Payline and high development costs, shot ahead from £38,756 to £198,364.

The boost came mainly from CCF's mainstream packages, but the bureau moved into profit for the half-year as chairman Tim Simon had promised.

He said the company had now established itself firmly in Hong Kong with strong marketing ties with the Honeywell subsidiary there.

This had led to the sale of three complete systems to various stockbrokers and shipping agents in Hong Kong, with other orders imminent.

"South-east Asia will be a major growth area for this company in the future," predicted Simon.

The establishment of the marketing subsidiary in Hong Kong had been achieved without any major impact on costs, and clearly demonstrated the potential for UK software in the financial capital of South-east Asia, according to Simon.

SIMON . . . "Increase in demand."

In the company's mainstream business of supplying brokers with standalone in-house computer systems based on the Fiscal stockbroking and investment management systems, business is booming.

"There has been a steady increase in demand for Fiscal during the year and sales of the Ships shipping system in this period outperformed the whole of 1982," Simon said.

SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Date 8/8/83 — Index 143.19 — Change -1.24

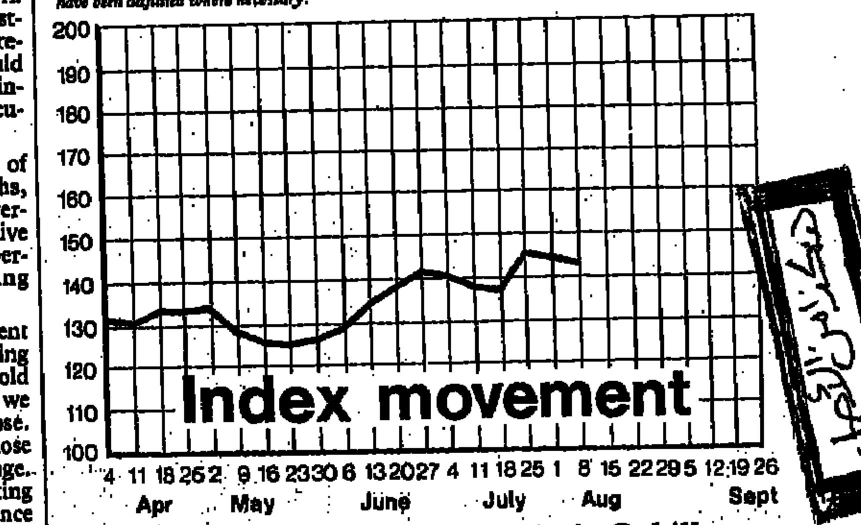
London Stock Exchange

Pence 1983 High	Pence 1983 Low	Stock	Pence Price	C'nge
845	240	ACT (App Com) (25p)	506	-10
88	41	B. Bov Kent (25p)	78	+½
183	124	Chubb (20p)	163	-3
178	120	Cole Group (25p)	138	-2
352	152	CASE (20p)	352	+12
885	540	De La Rue (25p)	570	-8
378	264	Extel (25p)	381	-7
689	411	Ferranti (50p)	689	+28
248	182	GEC (5p)	217	+3
82	66	ICL (25p)	73	-2
61	41	Kalamazoo (10p)	61	+2
375	275	Kode Int (25p)	365	–
520	270	Memec (10p)	485	-5
160	132	Muirhead (20p)	150	-8
680	458	N'market (1981) (£0.05)	612	-22
2800	987	Norsk Data	2375	-225
320	207	Office & Elect (25p)	248	+2
1238	710	Philips Lamp (Fl 10)	1142½	-13½
268	178	Plessey (25p)	238	+1
50	24	Quest Auto (10p)	24	-6
594	418	Racal Elect (25p)	478	-10
320	225	Star Comp (10p)	315	-5
610	275	Systems Des (10p)	610	–
619	418	Thorn-EMI (25p)	618	+12
177	135	UCBT (50p)	150	–
		Unlisted Securities		
128	75	Bus Comp (10p)	93	-10
130	118	CPU (5p)	125	-4
168	118	Cifer (10p)	155	-3
380	145	Consult (C&F) (10p)	380	+50
183	158	Int'europa Tech (20p)	183	–
54	37	J.S.D. Comp (5p)	38	–
78	70	M.M.T. (5p)	70	-6
300	160	Memory Comp (M10p)	240	-16
418	208	Micro Bus (10p)	405	-10
805	285	Micro Focus (10p)	550	-85
445	310	Microgen (10p)	444	-1
206	135	Miles 33 (10p)	188	-2
217	168	NMW (£1)	203	-2
120	81	Rolfe & Nolan (10p)	114	+4
197	110	ScanData (10p)	175	–
85	56	Tech for Business (10p)	85	–
80	63	Trident Comp (10p)	65	+2
107	55	Zygal Dyn (5p)	100	–

US Stock

$ 1983 High	$ 1983 Low	Stock	$ Price	C'nge
29	15¾	Amdahl	22	–
60	29¼	Apple Inc	32¾	-2½
50	34¾	Auto Data Pro	38½	-1¼
67¼	43¼	Burroughs	51¼	-1½
16	11¾	Comp Auto	13¾	-1¾
23	17	Comp Sciences	17¼	-1¼
12¾	8½	Comshare	11¼	-1¼
62½	38¾	Control Data	53	-1¾
51	37¼	Cray Research	46½	-2
68¾	41	Data General	68¾	-1¾
24½	18½	Datapoint	20¾	-1¼
127¾	86½	Digital Equip	104¼	+2
40½	23½	Elec Data Sys	38½	–
18¾	5¼	Gen Automation	12¾	-½
43¾	19¾	Gould	33¾	-1
51	36¼	Harris	39	-2⅛
88	74	Hewlett-Packard	84½	-¼
124	86	Honeywell	117	-2¼
41¾	20¼	Intel	38¾	-1
125½	96½	IBM	119½	-2¼
71¾	54½	Litton Ind	60¾	-2
17¾	12¼	MDS (Mohawk D)	12¼	-1¼
32¾	18	MSA (Mgmnt Sci)	26½	-3¼
18½	11	Mngmnt Assist	11	–
15	8½	Modular	14¼	-½
148	84½	Motorola	138¼	-2¼
67	38¼	National Semi	50	-1¾
124½	87½	NCR	117½	-4¼
34	24	Perkin-Elmer	31¾	-1¼
29½	16¼	Prime	16⅛	–
58¼	44½	Raytheon	48¾	-1⅛
37½	28¾	Signal	34½	-1
43¼	33½	Sperry Comp	42½	-¼
24½	19	Storage Tech	19¾	-½
32½	24¾	Tandem	28	-½
62¼	44¼	Tandy	47¼	-2
171	106¼	Texas Inst	106¼	-1⅝
28	18½	Tymshare	18½	–
40¾	21½	Wang Lab B	32⅛	-⅜
17	9½	Wyly	12¼	-¼

The table shows the mid-day prices in London on Friday and the closing prices in America on Thursday. The Share Index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



Company News is compiled by Kevin Cahill

PROFILE

Sales teamwork pays dividends at Delta

FEW sales managers have as much say in running their companies as David Longley of Delta Systems. Since taking over in April 1982 he has completely reorganised the sales team, and played an active part in developing new products and forming a coherent development strategy.

His impact was immediate, with a loss of £80,000 on turnover of £2 million for the year ended March 1982 converted into a profit with an increased turnover of £2.6 million for last year.

The inevitable reward has now come Longley's way with elevation to the board of directors.

The turnround resulted quite simply from more sales. Longley set about achieving this by

by Philip Hunter

streamlining the sales team, and forming three teams — one for the South, one for the North, one for government sales.

"It was not quite right when I joined," says Longley. "There were not enough salesmen and all reported in one line."

There are now three in each team, with an additional support team of nine.

The business is computer terminals with programming facilities, and communications devices.

One of the big sellers is the Delta 2830 Burroughs emulation terminal for mainframe users. Longley has been instrumental in adding features to make this terminal more attractive, such as an addressable printer port that keeps the terminal free during printing.

"The company has come a step nearer to the dream of having intelligent micros downloading data from mainframes by adding a disc unit which can be directly addressed by a large computer. It is also possible to have two independent communications dialogues going simultaneously, one with the Burroughs mainframe, and local processing on the disc unit.

"The problem many have is that the VDU screen is slave to the micro," says Longley. "This is all very boring. We believe the industry will not buy that dumb approach."

LONGLEY . . . "We believe industry will not buy that dumb approach."

Another problem is that users often want to prepare messages and text and this ties up the mainframe, Longley argues. He has come up with an answer in the form of a text processing terminal with a 40,000 character memory to manipulate messages.

Before joining Delta Longley was UK sales manager for US mini maker, Harris — something of an uphill struggle, since the company was flagging in the UK.

"Harris was caught out by DEC and Data General getting CAD/CAM houses," says Longley.

But Harris was more successful in the market for 3270 screens for IBM mainframes.

Longley presided over greater success in his previous job running a sales group at ICL. He was UK support manager for Singer Business Machines until the company was bought by ICL in 1976.

"I became one of the assets bought by ICL and was moved to the government division."

Longley highlights an 18 month stint in Brussels while with Singer as the most memorable part of his early career. "A beautiful, tremendous place," he enthuses.

PLATFORM

This Platform is based on policy statement by the International Council for Computers in Education on network and multiple machine software.

Tight budgets no excuse for software piracy

JUST as there has been shared responsibility in the development of the International Council for Computers in Education policy on network and multiple machine software, so should there be shared responsibility for resolution of the problems inherent in providing and securing good educational software.

Educators have a valid need for quality software and reasonable prices. Hardware developers and/or vendors also must share in the effort to enable educators to make maximum cost-effective use of that equipment.

Software authors, developers and vendors are entitled to a fair return on their investment.

Educators need to face the legal and ethical issues involved in copyright laws and publisher license agreements and must accept the responsibility for enforcing adherence to these laws and agreements. *Budget constraints do not excuse illegal use of software.*

Educators should be prepared to provide software developers or their agents with a district-level approved written policy statement including as a minimum:

1. A clear requirement that copyright laws and publisher license agreements be observed;
2. A statement making teachers who use school equipment responsible for taking all reasonable precautions to prevent copying or the use of unauthorised copies on school equipment;
3. An explanation of the steps taken to prevent unauthorised copying or the use of unauthorised copies on school equipment;
4. A designation of who is authorised to sign software licence agreements for the school;
5. A designation at the school site level of who is responsible for enforcing the terms of the district policy and licensing agreements;
6. A statement indicating teacher responsibility for educating students about the legal, ethical and practical problems caused by illegal use of software.

Hardware vendors should [illegible] educators in making maximum cost effective use of the hardware and help in enforcing software copyright laws and license agreements. They should:

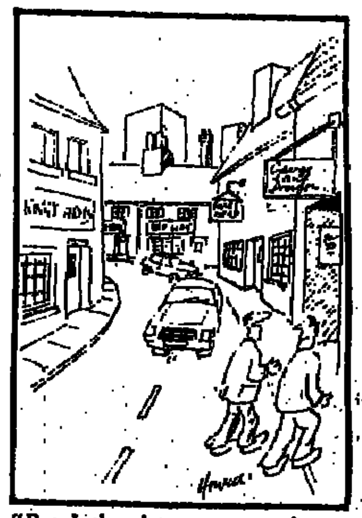
1. Make efforts to see that illegal copies of programs are not being distributed by their employees and agents;
2. Work cooperatively with interested software developers to provide an encryption process which avoids inflexibility but discourages theft.

Software developers and their agents can share responsibility for helping educators observe copyright laws and publisher licence agreements by developing sales and pricing policies. Software developers and vendors should:

1. Provide for all software a back-up copy to be used for archival purposes, to be included with every purchase;
2. Provide for on-approval purchases to allow schools to preview the software to ensure that it meets the needs and expectations of the educational institution. Additionally, software developers are encouraged to provide regional area centres with software for demonstration purposes. The ICCE encourages educators to develop regional centres for this;
3. Work in cooperation with hardware vendors to provide an encryption process which avoids inflexibility but discourages theft;
4. Provide for, and note in advertisements, multiple-copy pricing for school sites with several machines and recognize that multiple copies do not necessarily call for multiple documentation;
5. Provide for, and note in advertisements, network-compatible versions of software with pricing structures that recognize the extra costs of development to secure compatibility and recognize the buyer's need for only a single copy of the software.

■ See news story, page 2.

DOWNTIME



"But I thought you were going to show me your local network?"

World-shattering epic hits screen

WHILE you all were still locked into your programming nightmares or whatever you do Sunday mornings, I was developing daymares at a sneak preview of War Games, the movie that does for the Pentagon what Jaws did for marine biology.

I can fairly exclusively reveal that it's the most fun of its kind, certainly since Dr. Strangelove. If that's what you like.

The concept is that this sugary teenage computer buff and his treacly girlfriend log in accidentally to THE system. And of course take the thermonuclear option as the most kicks (sic).

Characterisation is Hollywood-monotyped, but the plot convinced me completely. When the kid chokes out, in McEnroe-style despair, "This is not real!" I could only beg to differ.

Those defence supply programmers who spend so much time and effort playing at cracking NATO systems passwords can testify to its plausibility.

The box itself, WOPR (what's that? Wipe Out People Routine?) is a superb contraption with coloured flashing lights, quite unlike your actual Cray fridge.

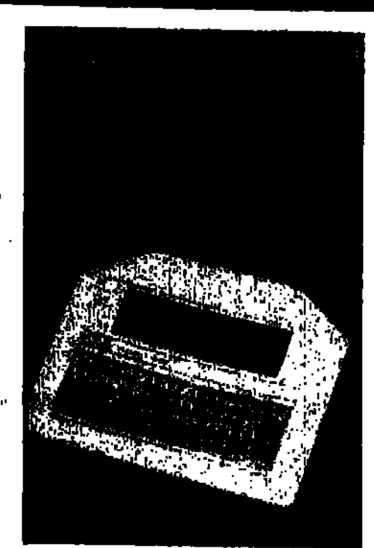
Fifth generation watchers will pick up that it is a Brit who's the brains behind the whole show — though unfortunately he seems hesitant about whether life on earth is worth bothering over.

There are a couple of excellent one-liners; the one about urinating on the relevant chips got loud and raucous applause from the aisle-rollers.

Anyone with any interest in computing and/or survival will love this epic.

The non-technical may at least glean that floppy discs have nothing to do with rabbits' back troubles. The philosophical question of whether the bigger threat to our continuation comes from the machines or the US presidency remains unsolved, but anyway . . .

Thanks for the Memorex free ticket.



Husky . . . data intact after crushing ordeal.

Down — not out

A UK micro maker was perturbed to hear that one of its models had arrived in the States looking as if it had been the unwilling cushion in an elephant's armchair, and labelled "damaged in transit". The micro, the outdoor Husky portable made by DVW Microelectronics, is after all supposed to be almost indestructible.

What had the airline done to inflict such damage on the bionic box? All knowledge of how the damage occurred was denied.

So the company has been left to draw its own conclusion — and has decided that the damage must have been caused by a four-ton fork lift truck, or body of similar size.

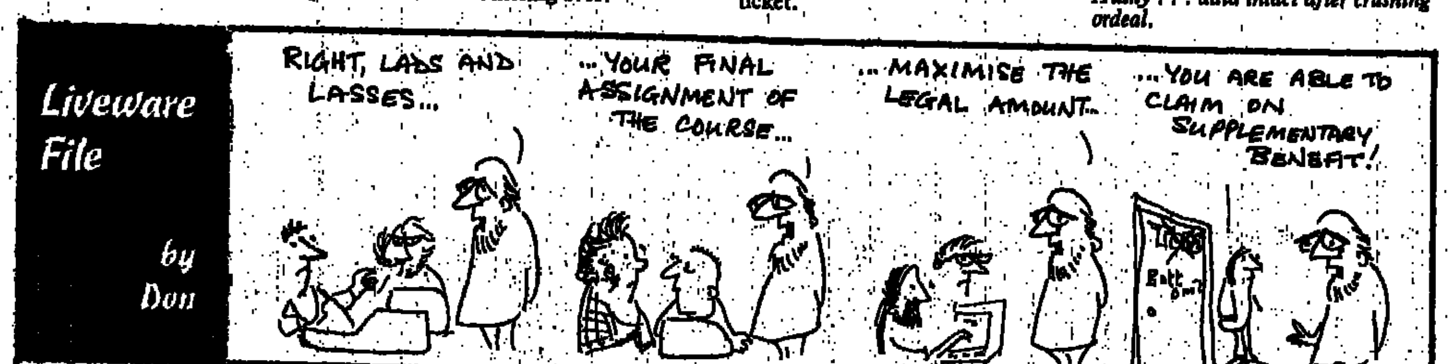
"Deep gouges on the underside of the aluminium casing suggest that it was dragged along beneath the truck, before being rolled over," says production manager Derek Ramsdale. This must have happened while the machine was being unloaded from the hold.

Anyway, the company is proud of the fact that its machine was still in working order after its ordeal.

"If it had contained data that was critical it could be recovered," says a spokesman.

10 YEARS AGO

FROM COMPUTER WEEKLY OF AUGUST 9, 1973: The Management Survey Centre predicted that the lead in computer staff pay would come to an end. Programmers pay ranged from £1,602 to £2,358 a year. A £1 million Post Office order went to Plessey for the UK's first computer-controlled international public telex exchange. IBM announced a new model of its System 7 industrial and process control computer.



Computer Weekly
Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS
Thursday, August 11, 1983

Watch out, here comes AT&T

THE channel through which AT&T will be able to reach overseas markets for the first time on any sizeable scale is opening up at the very time when the parent company in the US is being pruned severely by the divestiture of all its local operating companies.

If the pruning analogy holds good, this double event may encourage a vigorous growth. It will be fuelled by the energies of a management team which, used to controllling a large and complex operation, suddenly finds itself at the heart of a powerful but compact and simple one.

The route AT&T has chosen to take into the international market through the worldwide marketing network operated by Philips, could be the means of achieving rapid and dramatic results.

AT&T is currently the world's biggest company. Its shares are legendary for being the repository of little old ladies' savings. And Philips is no minnow. But the history of attempts at co-operation between two such giants contains many monumental failures.

Already the process of coming together has been marked by long delays. The joint venture was expected to be formalised early this year. In April a spokesman for AT&T International said it should be tied up early in May, but the deal was not signed until July.

When the venture does start work, its first task will be to combine the PRX-D digital exchange that Philips has been developing with the 5-ESS exchange that AT&T launched late last year.

If Philips and AT&T separately were not worrying competitors for the UK's System X digital networking system, they certainly are now. And whatever happens, the progress of this marriage of giants will make a compelling spectacle.

Alternative chips

WHEN Dr Gene Amdahl and his son set up Trilogy they promised that Trilogy would "re-invent" computer-aided design, "recast" the semiconductor basis on which computers are built and would present the world with a new mainframe architecture.

To balance those apparently extravagant promises the two men also warned those who were financially supporting the project that what they were proposing "had not been attempted before, might not work, and even if it did work, might not sell".

So far Trilogy has made good on two elements of its proposal — the computer-aided design element and the semiconductor element.

And that is not simply our view. Digital Equipment Corp, whatever market doldrums it may be suffering at the moment, remains the number one computer company in terms of its engineering and innovation.

And Digital has taken the view that Trilogy has made good on two of its promises, and put $24 million where its mouth is — a goodly commitment even for a company of DEC's size.

Sperry Corp has been even more lavish and put $42 million behind the opinions of its best engineers and technologists, who are obviously convinced that Trilogy has made it in the semiconductor field.

Honeywell was in from the beginning, General Electric is talking to Trilogy, as is Nixdorf, and a raft of other blue chip names in the industry.

The clear implication is that the best companies in the industry, having put their engineers in, are convinced that Trilogy is to be the fountainhead for semiconductor technology for the next generation of computers.

Only potential competitors, principally IBM and the IBM compatibles, are excluded by the terms of Trilogy's set up from doing deals with the company.

Which, by a simple extension, makes it look that there may only be two technologies in the computerised future — that which is made by Trilogy, and that which is not.

In an industry dominated by IBM, it is sure to be in the interest of computer users to see Trilogy succeed with its ambitious plans to offer an alternative.

1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Graham Stedman of London, who wins £5.

If the world's most powerful computer can control even Superman . . . no one on earth is safe.

Advertisement for the film Superman III

LETTERS

Not everybody price cheats

I WAS interested to read Paul Walton's article (*Computer Weekly*, July 28) concerning the price of imported software.

I was surprised to hear that it is considered common practice to exchange the dollar sign for a pound sign. I suspect that Mr Walton is rather out of touch.

Like Lifeboat, Xitan has long followed the policy of pricing most software from the US at a conversion based on the current dollar rate.

Sure, it costs money to import the software, and this comes out of our margins. But we still manage to offer our dealers good discounts, and run a thriving business. I would consider that any software distributor worth its salt (of which there are perhaps precious few) can negotiate adequate deals with the software houses, and run its business tightly enough, to allow users in the UK to buy at equivalent prices to users in the US. Isn't this the distributor's job?

In general, the only cases where the conversion rule does not apply is where UK pricing is fixed by the software houses themselves. MicroPro has a recommended sterling pricing which is based on a dollar rate higher than the current one — so UK users can actually buy their software cheaper than US users.

Digital Research used to have a recommended dollar price in Europe that was higher than in the US, but dropped this from July 1, so pricing is now the same on both sides of the Atlantic. MicroSoft enforces UK prices that are slightly higher than the US ones.

So what's the problem? If users find their software prices high, perhaps they are not buying from one of Xitan's registered dealers?

JOHN DARDS
Marketing Manager
Xitan
Southampton.

Impossible

THE problem set by Puzzler (*Computer Weekly*, August 4) is impossible.

S. GILINSKY
EOB Limited
Sunderland.

■ *Thanks to the many letter writers, telex senders and callers who pointed out that our artist mistakenly added an extra line to our puzzle and answer. Sorry but see below.*

The Mail misquoted

I THOUGHT I would just let you know that you paid out £5 to Mr Dale (*Computer Weekly*, July 28 *1984 and all that*) under totally false pretences.

I was, in fact, totally misquoted in the *Daily Mail* and the comment should have read: "As the titles on the manufacturer's computerised lists are still in circulation, it would be impossible to delete them until each and every one is returned".

If we did delete the titles before that time, it would, obviously, mean we would no longer be aware of their whereabouts or quantities.

I suggest that maybe it is the *Daily Mail* who say strange things about computers.

PAUL H. FELDMAN
London.

The puzzle of the extra line

WHATEVER has happened to Puzzler (*Computer Weekly*, August 4)? The puzzle is impossible, and a corrected version would be trivial.

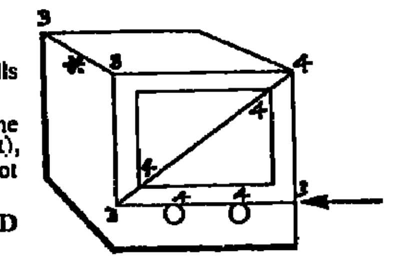
Route problems of this sort are well-known. All it boils down to is counting the number of lines which meet at each intersection. Several cases are apparent:

1) All intersections have an even number of lines — there is more than one route.
2) Exactly two intersections have an odd number of lines — these are the end points of a route.
3) More than two intersections have an odd number of lines — there is no solution.

Unfortunately, your puzzle falls into category three:

Your solution works if the * line is removed (see diagram right), but such a simple "puzzle" is not up to the usual Puzzler standard.

PHIL LLOYD
South Nutfield, Surrey.



The Key Specialist Event in the Computer Year

Sponsored jointly by the Peripherals Suppliers Association and 'Systems International', Peripherals '84 has justifiably been named the *only* specialist show for computer professionals.

Through a massive publicity campaign using all the key systems development publications, Peripherals '84 will attract a record number of visitors from purchasing/specifier sectors of this continually expanding market. Attendance in 1983 was up 25 per cent on 1982. And 1984 is all set to be the biggest and most successful to date.

This is *the* buyer/specifier confrontation of the year. Don't miss it.

How to Book Your Stand

This is the key specialist event in the Computer Year – ACT NOW – for further information telephone Ian Hardman, Sales Manager on 01-661-3022.

PSA members are eligible for a preferential stand rate. If you are not already a member and would like to know more about the association's aims and objectives phone Mr Michael Perry on 0908 668118. Provided you become a member before the opening of Peripherals '84 you can claim the special members rate.

For more information return this coupon to Ian Hardman, Peripherals '84, Room L216, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

Name

Position in Company

Company

Address

Tel

PERIPHERALS 84 SUPPLIERS EXHIBITION

WORKPLACE

Academics are taught a lesson

SOFTWARE houses are waking up to the possibilities offered by the huge wealth of raw material from universities waiting to be exploited. And in some cases the raw material needs little refining. Systems Designers, for example, has little more to do than fix a price tag to the Poplog package it is marketing, which was developed at Sussex University.

And the Ada compiler written at York University needs only to be dressed for the market by SPL International.

But such successes are probably the exception. Poplog has already been sold by Sussex University for £3,000 to commercial users, and £300 to academics.

SDL will more than double the price to between £6,000 and £7,000 to cover the cost of continuing support. Universities will still get the lower rate, but no support.

The main reason for the decision by the university to give up commercial marketing rights is that project leader Aaron Sloman disliked wasting his time as a salesman.

SLOMAN . . . "Wanted to get rid of it."

"I wanted to get rid of it as fast as possible," Sloman says of Poplog. Sussex will get half of the new price as royalties.

The package is a combination of three artificial intelligence languages: Lisp, Prolog and Pop-11, which looks like Pascal without the type checking statements.

All three languages compile into a single language. This means that programs can be written in a mix of the three languages, giving users the best of all worlds. And only one compiler has to be rewritten to put the package on to a new machine. SDL's version runs on the Digital Equipment Vax, but Sloman is still developing a version for the ICL Perq supermicro, and the Bleasdale M68000-based micro with Unix.

Sloman says there had been a spate of commercial orders for Poplog before SDL took over marketing. There are now 12 commercial users, including two in the US interested in the Prolog capabilities. Prolog features prominently in the Japanese fifth generation plan to develop artificial intelligence applications, and has attracted attention in the US.

Sloman says he is thinking of getting Poplog implemented on IBM computers to bring in more US contracts. But he wants to keep this development at arm's length, being a little tired also of redeploying the package for new hardware. And there is a plan to put Prolog on the Prime mini.

There are also about 30 academic users of the package, taking advantage of the low price for them of £300. Sloman thinks they have also been lured into buying by the decision of the Science and Engineering Research Council to feature it in the IKBS programme to develope artficial intelligence applications.

Two Royal Academy of Dancing students admiring the talents of their new machine.

Dancers give computers a whirl

COMPUTERS and art are becoming inseparable. After the Tate Gallery's recent exhibition of Robert Cohen's drawings generated by an expert system, the Royal Academy of Dancing has lifted its curtain on the act — using to compute the choreography of the music, but for the drudgery of keeping members' records.

With 12,000 to 13,000 members this work had got out of hand. So an NCR I-9020 system has been brought in to keep records, which include details of ballet exams taken and passed.

Readers of *Computer Weekly* will have seen recently how musicians are making more use of computers with advances in digital recording. The present development is to use computers to generate music in real time rather than have them just perform sequences of sounds laid down in advance. This poses the problem of how the musician is to control the sound and maintain spontaneity.

Report writer package eases the Cobol load

THE coding load could be lightened for Cobol programmers with a new package for report writing from a small London company.

The package, just announced by S&PC Systems, is an extension of the existing Report Writer defined in the 1968 Cobol standard by ANSI, the American Standards Institute.

According to John Piggott, managing director of S&PC, many tedious lines of coding can be avoided with the new report writer.

ANSI Report Writer, Piggott declares, is sadly lacking in some of the facilities that programmers really need, such as the ability automatically to repeat fields of data when printing.

S&PC has added this facility in its new Full Report Writer with an OCCURS clause which enables fields to repeat. This clause is already present in the Data Division of the language for input of information, but until now there has been no facility for output.

Full Report Writer is particularly useful where there is a lot of repetitive information to be printed, and Piggott gives as an example a program to print a calendar. This can be done in 50 lines of Cobol, using the new OCCURS clause, compared with several hundred lines without it.

Full Report Writer has 12 clauses not to be found in ANSI Report Writer. About half of these are clauses like OCCURS already existing in other parts of the language for input or manipulation of data. The other half are new ones devised by S&PC or recommended to Codasyl.

An example of this second group is the PRESENT clause. This allows greater flexibility by enabling unwanted data to be omitted from specific reports. It could be used to stop a bank account number from appearing on the payslip of an employee who is paid cash.

Workplace is compiled by Philip Hunter

PUZZLER

RTHDXXFRDDNSDNT
KNWLDPRTFRMLGWD

Legend has it that this caustic comment was once carved on a professor's door, at one of our great universities, by a disgruntled student about to be "sent down."

Clearly something is missing. Can you work out what, before turning to page 47 for the complete answer?

PEOPLE

■ Appointed managing director of Prime Computer (UK) is **Malcolm Padina**, (above). He will be responsible for sales and service of Prime computers throughout mainland UK. **Neil McMullan**, former managing director is to head Prime's new New South Pacific region. Padina has been managing director of Prime Computer in Germany.

■ Southern area sales engineer for Instem Computer Systems is to be **John Carruthers**. He will be responsible for selling the Instem range for data acquisition and control to Southern England. Carruthers has several years' experience in instruments and control, including a period at Rochester Instrument Systems.

■ **Christian Schmid** has been appointed European distribution manager for Seagate Technology, supplier of 5¼in Winchester disc drives. **Eric Pattis** is named as applications engineer for Seagate's European operation. Schmid is to be responsible for European sales, distribution and support for all Seagate products, and will be at the company's Munich office. He replaces **Joop van de Hel** who recently left Seagate.

■ Sintrom Electronics has appointed **Martin Rimmer** as product manager for the company's new Business Systems Group. He will be responsible for marketing the recently launched Sintrom laser printer throughout Europe, primarily on to ICL Perq systems. Rimmer was a sales executive with Anderson-Jacobson before moving to Sintrom, and before that worked for five years for Opperman Gears, part of the Hawker Siddeley Group, initially as a sales engineer in home and export markets and later in sales management.

■ Appointed director, customer engineering, for the Memorex International Group is **David Jenkins**. He is responsible for supporting customer engineering managers throughout the group. Jenkins comes from the Communications Group in Santa Clara, California, where he was vice-president of manufacture.

■ **Neil Aldred** has been appointed director of strategic marketing for Northern Europe with Masstor Systems. He will be responsible for joint marketing agreements between Masstor and other mainframe suppliers, and marketing within the banking and financial sector. Aldred has spent 17 years with Honeywell Information Systems, most recently as manager of South-east branch responsible for the sale and systems support of all products.

■ General Automation announces the promotion of Bill Rice, managing director of General Automation Ltd, to vice-president of sales, World Trade Division. He will be based at Anaheim, California.

■ *Two chartered accountants have joined the board of Premier Computers.* **David Donovan** *becomes sales director and* **David Macmillan** *financial director. Donovan (left) is a former area sales manager and sales manager at Premier. Macmillan (right) joined Premier's West German operation in 1981, becoming director of European finance in 1982.*

■ MAP Computer Systems, the Oldham packaged software company, has strengthened its software service with the appointment of **George Bell** as software manager. He has overall responsibility within MAP for developing packaged business software for microcomputers. He has six years' experience in programming and has been with MAP since 1981.

■ **Nick Gill** has been appointed managing director of the Hunterskil regional business, Hunterskil South in Maidenhead. He has been involved in sales and management training since leaving his position as managing director of KPG Computing Services in 1980.

■ Package Programs has appointed **Ann Goss** (above) as a client support consultant for its Human Resource Systems Division. She will support users of the PPL-Cyborg Payroll and Personnel System. Goss previously spent six years with Baric Computing Services in the Customer Services Department.

■ Paradyne, manufacturer of high-speed modems and IBM network communications systems, has appointed **David Hobin** as managing director. He has spent the past seven years with Paradyne, as director, Paradyne (UK), and director of the Western region, comprising 13 States of the US.

■ **Antony Edwards** has been appointed chief executive and general manager of Storno, the General Electric mobile communications subsidiary. He is a former vice-president of General Electric Technical Services Company (US).

■ **Elizabeth Edmunds** (above) joins Cifer in the newly created post of dealer support analyst. She will be responsible for supporting Cifer dealers on application packages. She previously worked with Geest Computer Services in customer support.

■ After nearly 46 years with the Sperry organisation John Jakens is taking early retirement. It was in 1937 that Jakens started work with the Remington Typewriter Company as an apprentice mechanic. Jakens was involved in the first moves to set up Univac, and in 1971, he gave up customer engineering to become company administration manager. He continued to run Remington House and all its services until Sperry moved out in 1981 and since then has carried out similar functions at the company's new central London location at Centre Point.

■ **John Lee** has rejoined Rediffusion Computers as a systems consultant for the videotex branch and will be based in Birmingham. Previously he was employed by Datapoint/Inforex as a sales support analyst from 1979 to 1983, and prior to that he was with Rediffusion (then known as Redifon) Computers.

■ Unix software venture Sphinx, has appointed **John Winter** as software sales manager. He has worked in the computer industry since 1966, for Hoskyns, Honeywell Information Systems (Time Sharing Division), Software Sciences and IAL Gemini.

■ **Steve Jones**, 33, until recently marketing accountant with Max Factor, has joined Dataflex, of Hammersmith, as technical services manager to support sales of the Ferox Modeler financial modelling software package for microcomputers. Dataflex was formed earlier this year as a microcomputer systems and software distributor.

■ Prime Computer (UK) has made **Peter Stallard** national field service manager, based at the company's headquarters in Hounslow, Middlesex. For the past 12 months he has been field engineering manager for Prime's Midland district.

■ Based in Paris, **Alain Kortchinsky** is appointed regional manager for Shugart's operations in France, Italy, Belgium, Holland, Spain, Portugal, Israel and South Africa. In England, **Barry Barker** has been promoted to regional manager, still responsible for the UK and Ireland, but adding Sweden, Norway, Denmark and Finland to his list.

■ **Werner Radford** is to be technical support and training engineer at Perex. He joins from Racal Training Services where he was an instructor and commercial officer.

■ Law Data Systems, a Leeds-based software house specialising in the development of debt collection systems and services for the legal profession, has appointed **Mark Fletcher**, 30, as marketing and sales director. He has been involved in the marketing of computer systems since 1976.

■ **Phil Blatchford** (below) has been promoted to general manager of IBR Microcomputers, distributors of the Fortune 32:16 multi-user desk-top micro. Based at Reading, he will be responsible for all aspects of the marketing and distribution of the Fortune 32:16 system.

DIARY

AUGUST 16
Data Communications Overview at the Control Data Institute, **London**, gives an introduction to modern communications systems. Organised by Control Data, it costs £145. Details from Sylvia Lyons, 01-240 3400.

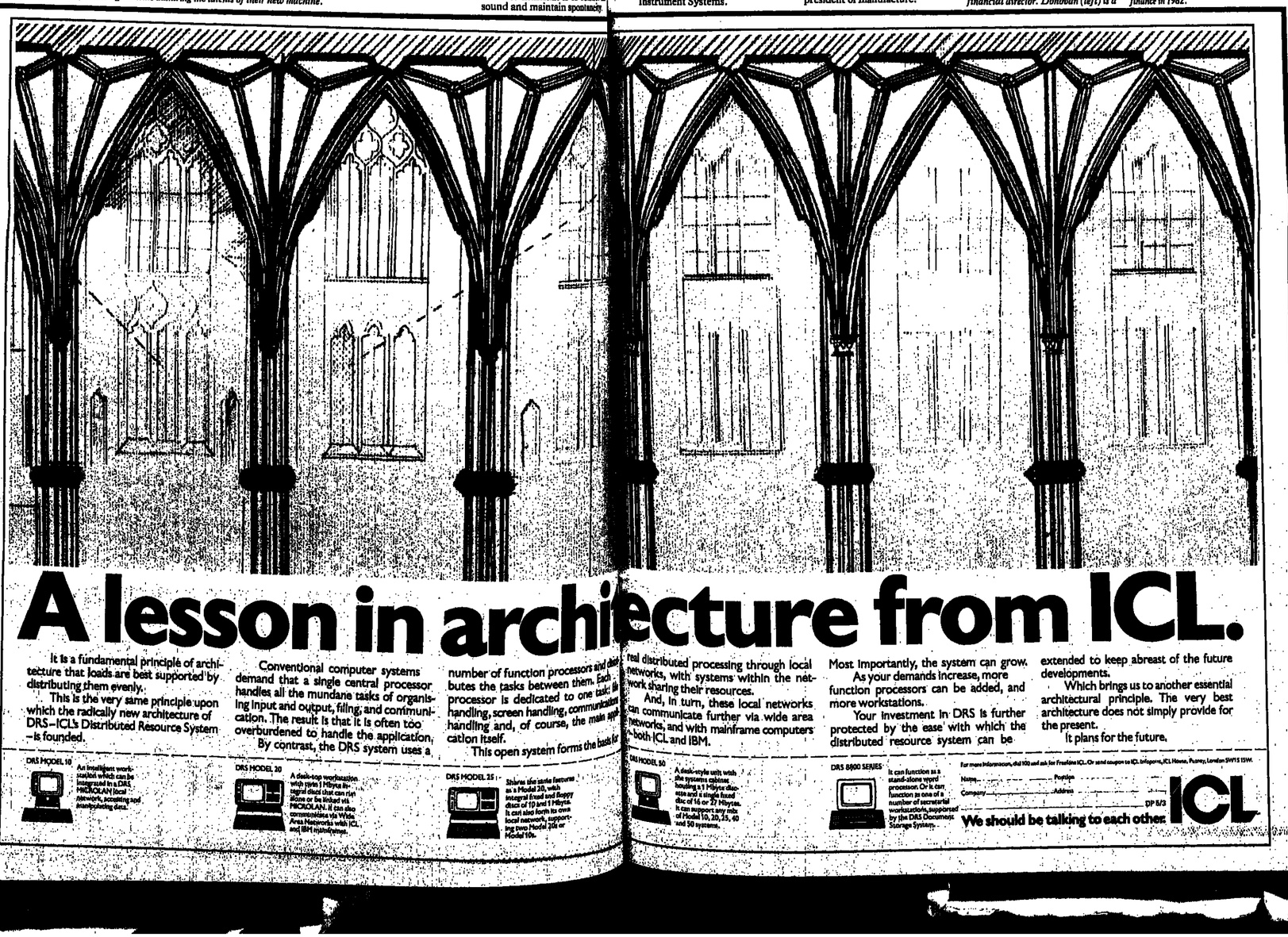
AUGUST 30-SEPTEMBER 2
The second International Conference on Database, organised by the British Computer Society and universities of Aberdeen and Cambridge, takes place at Churchill College, **Cambridge**. Details: Peter Hammersley, Middlesex Polytechnic, London N11 2NQ.

AUGUST 31-SEPTEMBER 1
Improving Programmer Productivity is a practical workshop for trainee programmers with basic language training and initial experience. Run by BIS Applied Systems, it is to be held at the Park Court Hotel, **London**, and costs £270. Details: Cherry Bigmore, 01-261 9237.

SEPTEMBER 6, 7
BIS Applied Systems is running the course, Team Management Leadership, for newly appointed project or team leaders. It will be held at the BIS Training Centre, London SE1. Cost is £285. Details: Cherry Bigmore, 01-267 9237.

SEPTEMBER 5-8
IBM Cobol Review, a course organised by Altergo Education, takes place in London. Aimed at inexperienced Cobol programmers, it costs £450. Details: Altergo Education, 01-836 9303.

SEPTEMBER 7-9
Implementing and Operating Local Area Networks is a seminar organised by Frost and Sullivan. Taking place at the Mount Royal Hotel, London, it costs £425. Details: Carolyn Budd, 01-486 0334.



TRANSACTION TELEPHONES

Piltdown or panacea of payment systems?

Gil Jones looks at the scope of a new development in UK retail outlets

Transaction telephone in use for Debenham's in-house credit card system.

TRANSACTION telephones are now being introduced for the first time into retail outlets, banks and other transaction points in the UK where credit cards are in common use.

What are transaction telephones? Essentially they are sophisticated terminals capable of functioning either as a modern telephone for voice traffic or as a memory-based dialling facility for establishing a link through the PSS network to remote computers.

For the moment their primary purpose – indeed their only purpose – involves credit transactions for credit cards. Only Barclaycard and Amex are open for business. Shortly Access and Diners will join them.

Transaction telephones are also being used in one in-house credit card system (Debenhams).

The transaction telephone allows the retailer, bank or other user, to obtain rapid and automatic credit authorisation for the card tendered to him, thus removing the need for the rather distasteful and time-consuming telephone call that is currently necessary for transactions above the floor limit.

There is no doubt that transaction telephones at least in the immediate term, represent an important new development in payment systems. The longer term question is whether the introduction of transaction telephones represents a major step forward in payment automation towards, ultimately, electronic funds transfer systems (EFTS), or whether it will prove to be the Piltdown Man of payment systems – an apparent evolutionary development that will turn out to be a blind alley, superseded by another, quite different development path.

We at RMDP, Retail Management Development Programmes, believe the former, for several reasons. First, we have believed for a number of years, and have said so often, that the attractive way toward more sophisticated and cashless payment systems is via sensible inexpensive steps that can be demonstrated to have real benefits for those footing the bill for the systems, rather than via a one-off jump into full ranking EFTS.

Secondly transaction telephones, because they offer useful benefits at a relatively small cost, will be adopted widely in the UK and elsewhere over the next two to three years and beyond. Future developments, under the banner heading of EFTS or otherwise, will therefore have to take them into account because they are there.

This may not be true in all areas. In fuel retailing for example, where credit card transactions are common, the trend is toward full EFTS systems.

There is a massive potential market for transaction telephones. Their potential encompasses all retail cash register points where credit card transactions represent a relatively high percentage of transactions (this will include many departments within the department stores, fashion and shoe multiples, many counters in variety stores, cash and carry, some do-it-yourself outlets and many other multiple and independent outlets, large and small).

In addition to the retail market there are many other places where retail type transactions take place (quasi-retail outlets as we define them) such as hotels, travel bureaux, airports, railway stations, restaurants, etc. And in the banks transaction telephones are already in use in the cash against credit card facility.

RMDP has recently carried out market research on transaction telephones to provide potential market estimates for each of these sectors, and we estimate the total potential market in the UK as 255,000 units.

Currently four companies offer transaction telephones: STC, Ericcsson, GTE and Racal. In an area not exactly famous for co-operation and liaison regarding standardisation of equipment and services; these four transaction telephones represent a refreshing example of different interest groups holding hands before they jump.

The design of the four terminals – apart from a few minor differences – is essentially identical. This is because they have all been brought to a specification developed by the Credit Card Companies Technical Committee (CCTC) chaired by BT and dominated by the credit card companies, which appear to have been fairly precise in their requirements of the transaction telephone.

The fact is that they have to be. Imagine trying to sell the idea to a retailer that he must have four transaction telephones on his counter to handle the different cards that he might be tendered!

But this does not mean that transaction telephones are easy to use with an identical, simple sequence for any card tendered. In fact the telephones can handle up to 15 different cards.

Transaction telephones are easily installed. All they require is a standard modern British Telecom jack-plug socket and a 13 amp mains electricity supply. The terminal when transmitting data communicates over the normal PSTN until it makes contact with the nearest local PAD (Packet Assembler/Disassembler). From this point the terminal appropriately addresses the data for high speed digital transmission across the PSS network to the host computer.

The telephones also have the facility to switch automatically between PSS and PSTN connection if connection is not made successfully through the first route.

At present there is no doubt that the main initial beneficiaries in the use of transaction telephones will be the credit card companies themselves via the reduction in fraudulent use of credit cards. For this reason it is expected that the cost of these telephones to the retail or other user (about £10 a month rental) will fall or even disappear within a short time. Transaction telephones cost between about £250 and £450 depending on type, precise specification and numbers bought.

There are, however, some initial advantages to the trader. Among these are that all credit cards may be checked irrespective of floor limits. Floor limits can be altered randomly and frequently by the card issuer without even the knowledge of the shop staff involved; all credit cards can be processed in an identical manner; and credit authorisation will in general be quicker than via a normal telephone call.

But the real benefits for the trader lie in the future. And the prime development that will be looked for is the use of these telephones to enable credit card transactions to be paperless. This could be done now, since when the telephone makes contact with the credit card company's central computer for credit authorisation purposes, all the information for a paperless transaction is known (credit card types and number, amount of transaction, identification details of the transaction location – ie retail branch or hotel or whatever).

The problem is more political than technical since it requires the credit card companies to alter their systems. Before they can do this they have to overcome worries about audit trails in the event of erroneous transactions and the demand by customers for some form of documentary evidence of transaction.

From the traders' standpoint paperless transactions would be a terrific boon. The current archaic system of filling up the five-part flimsies takes a long time (to the constant irritation of those further back in the queue) and is extremely error prone. Inexperienced staff often fill out flimsies incorrectly or record a Barclaycard transaction on Access documentation or whatever.

Paperless transactions via transaction telephones would eliminate both these problems and more.

There are other possible future developments. At the moment if a credit authorisation is refused the terminal is referred to voice contact – that is to say the operator of the terminal is requested to telephone the credit authorisation centre. Already facilities exist for the number of that centre to be automatically downloaded into the terminal so that the terminal can then auto-dial the number, so making the necessary contact.

A further refinement is that the credit card authorisation computer will automatically pass on details of the transaction, and the reasons for the refusal, to the credit authorisation centre (which may be in a different location) so that the recipient of the call will already have the relevant information on the VDU.

Another future development of particular interest to retailers is the possible integration of transaction telephones with EPoS terminals. This is already being experimented on by NCR and we are looking for more progress in this area, involving other equipment suppliers, shortly.

Dr Gil Jones is a director of Retail Management Development Programme.

At the fourth European Congress on Automation in Retailing (EPS '83), to be held at the Royal Lancaster Hotel, London, September 20-23, organised by RMDP, there will be a session on The Retail Banking Interface.

Details of EPS '83 are available from RMDP, 5/6 East Street, Brighton BN1 1HP. Tel: (0273) 722687.

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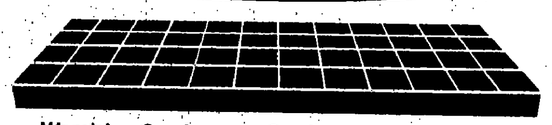

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LOCAL AREA NETWORKS

Why Xinet could be a giant among the local networks

David Casey reviews a significant arrival from Xionics which challenges Ethernet's local area network domination

AFTER three quarters of a century, Frank Hornby's Meccano sets still find a place in the Christmas stocking. The colours of the components have changed over the years and there are instructions in the handbook for building a North Sea Oil Rig, but the underlying principles of construction have remained the same.

Half-inch girders are standard, with a half inch pitch for screw holes, and 4 BA screw threads. From the outset, there has been a Meccano "protocol" which has to be observed if alternative components are to be integrated with the kit.

For all its sophistication, the Ethernet system for local area networking is a modern day Meccano set. The technology is being adopted by office system suppliers as the basis for their own networks, and this proprietory protocol is at the heart of IEEE standards for one of the types of network architecture.

Despite the trend towards Ethernet and its lower speed lookalikes such as Zilog's Z-Net, there are office automation manufacturers who have opted for networks wholly incompatible with this emerging standard. The majority have evolved to meet a specific requirement in the marketplace – whether to provide a low cost expansion path for computer resources, or an ultra secure office environment.

One of the more recent entrants to the office systems scene is G.B. Techniques of Prestwick. Virtually unknown in the commercial sector, the company has been supplying photocomposition systems for newspaper production for more than 20 years.

This sector of the printing industry requires a level of security not normally demanded for office administration. The failure of a disc drive holding the copy for the following day's editions, for example, would be disastrous: writing text to two independent drives simultaneously is therefore a standard practice.

Minicomputers dominate the newspaper production scene: DEC hardware alone accounts for more than 70% of all the installations worldwide. G. B. Techniques has opted instead for distributed micros linked over the company's Speednet network. Running business applications packages rather than composition software, Speednet has now been launched as a viable office automation product.

All components in the G.B. Techniques system are based on a Monoboard computer, built around a Z80 and providing an interface with the network. File storage at a local level can be floppy discs or five megabyte Winchesters, but the principal file server in a Speednet network is a Central File Store (CFS) carrying tandem Winchester drives.

Communication between the workstations and the CFS Winchesters is at the relatively low speed of 17,000 characters a second; the equivalent of perhaps four A4 pages of text.

Output devices on Speednet – the print servers – are linked to another Monoboard Computer acting as a satellite processor. Since G. B. Techniques has been interfacing its composition version of Speednet to almost every typesetter device on the market, hooking letter quality printers and matrix devices into Speednet has been a relatively minor task.

The CFS processors poll each Speednet peripheral in turn over low quality audio cable. A request from a terminal to update a file would result in a two Kbyte block being transferrred under full error checking protocol. Five retries will be attempted before an error condition is generated by the system. Data is checked on a second level. Each byte is examined as it is being transferred; a process which guarantees integrity at the expense of transmission speed.

The security inherent in a Speednet is high compared with most competitive systems, but the standards set are a pale reflection of those achieved by Xionics.

Xinet is a local area network based on a closed ring, with a maximum data carrying capacity of 10 million bits per second. The protocol for messages entering the ring is empty slot – a technique in which data can only be loaded from a node when reached by an empty carrier bit circulating round the network.

This contrasts with Ethernet, in which two node processors can attempt to transmit simultaneously. If a collision is detected, both nodes pause for a statistically determined period before re-trying.

But the transmission protocol is not what makes Xibus exceptional. In a totally secure environment, every key component is duplicated. There are at least two transmission paths between workstations and the master node controller, for example, while independent processors in the intelligent socket nodes around the network handle the same task simultaneously.

System security extends to the software. Before implementing any user command whose effect would be to alter or delete stored data, the information is written in its original state to a continuous log.

Each entry in this record system is accompanied by the time and date, the identity of the user or system making the amendment.

The Xibus system provides facilities for reading back through the log to recover data that may have become corrupted. In line with the Xionics philosophy, even the log is duplicated on a Xibus.

The technology devised originally for large scale network installations has now been brought down market with the Xionics MicroNode system launched earlier this year.

Up to eight intelligent workstations can be clustered under a single MicroNode device, with a total data flow over the lines of about 700 kilobits per second. As nodes on a larger Xibus system, groups of workstations can share common database and printer server resources.

Perhaps the best publicised Xionics installation is at the Cabinet Office in Whitehall: the company was awarded the contract under the Department of Industry Office Automation project.

A manufacturer whose system predates the current spate of activity in office automation is Datapoint.

The company's Attached Resource Computer (ARC) system had not been designed in the mid-70s as a local area network, but as a short cut to configuring larger computers.

By running co-axial cable between compatible disc drives, processors and workstations, the intention was to create more powerful computing facilities without having to replace existing hardware.

A bonus was that the resources could be distributed throughout an organisation.

The system which emerged was conceived around a co-axial cable joining two hubs – connectors which split the line into 16 branches, each supporting an ARCNET processor.

With a theoretical span of about four miles – a figure determined by the delay in passing a signal between two nodes – ARCNET is amongst the largest network spans available for purely local working. Access to the network is by token passing, a concept analogous to the driver's token which allows authorises a train to enter a single track line.

The protocol is controlled by a Resource Interface Module (RIM) within each processor on the network. ARCNET systems are dynamically re-configured whenever a new resource is added to the system: since every RIM carries a unique identity number with reference to a network, additional processors can be added any where along the line without powering down. This is made possible by the rules for passing the token.

The access token bit is moved between RIM processors in numeric sequence, irrespective of where each numbered RIM may be located in the ring. RIM 1, for example, always looks for RIM 2 which in turn tries to find RIM 3, and so on round the sequence to RIM 1 again.

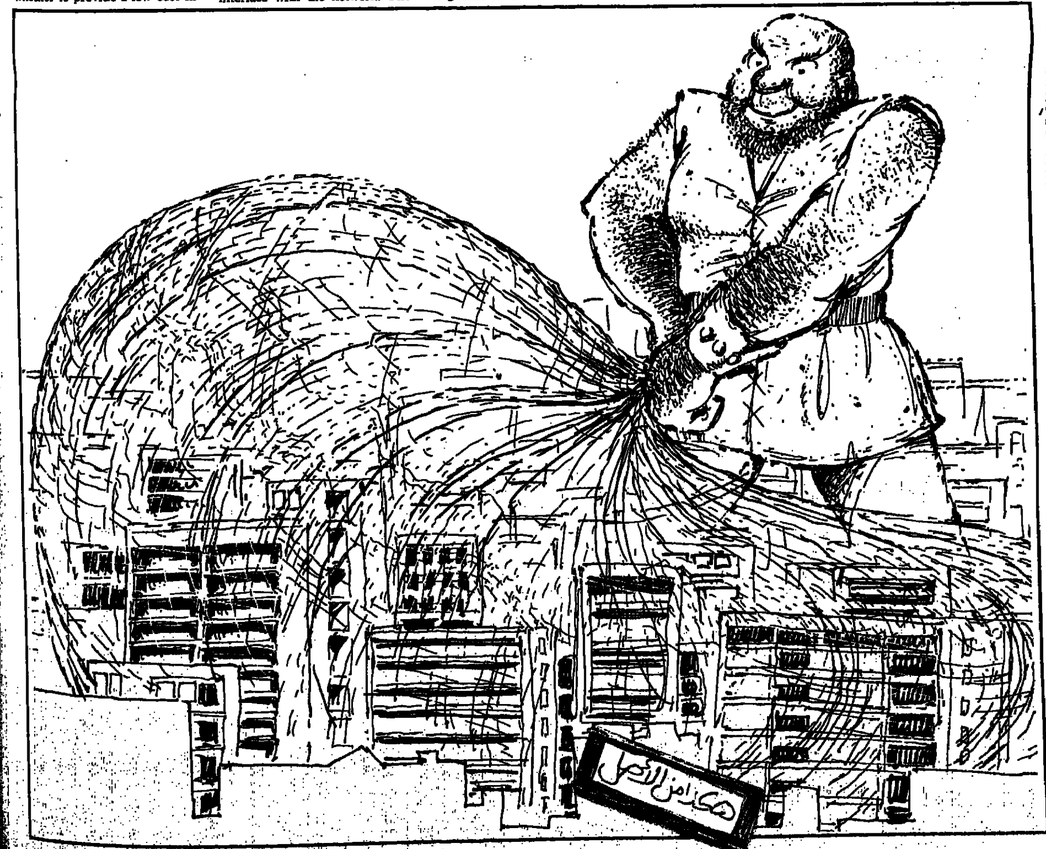
If RIM 4 is not connected the token will pass from the third to the fifth numbered node automatically. When a new processor is added, it injects a warning burst of data on to the line to indicate its presence on the circuit.

All processors on an ARCNET are multi-functional: they are equally capable of controlling printers as workstations. For devices supplied directly by Datapoint, the RIM is an integral component of the hardware: its operation is completely transparent to the user.

The radically different approaches taken by G.B. Techniques, Xionics and Datapoint illustrate the range and complexity of office automation environments whose requirements must be met. There are clearly defined areas of the market for which Ethernet configurations are inappropriate, and for which a credible alternative has been found.

After all, Lego has carved its own niche out of the construction kit market and it poses little threat of competition to Meccanol

The security inherent in a Speednet is high compared with most competitive systems, but the standards set are a pale reflection of those achieved by Xionics



Cut costs with simple command languages

Making software "user-friendly" saves time and money. Ben Shneiderman discusses friendly machines with Howard Karten

ONE of the most popular "buzzwords" of the past year has been "user-friendly". Reading the wealth of information that's been written on this subject, it sometimes seems as though people who decry current "user-unfriendly" software want software that will anticipate and understand a user's wishes, rather than the user's instructions.

In an attempt to clarify the situation, US correspondent Howard Karten spoke recently with one of America's leading authorities on user-friendly software, Ben Shneiderman.

Dr Shneiderman is associate professor of computer science at the University of Maryland in College Park – and head of the newly-formed Laboratory of Human-Computer Interaction there.

He is the author of Software Psychology: Human Factors in Computer and Information Systems, and has coauthored two undergraduate textbooks. He has written more than 80 technical research papers and edited three books.

He is currently editing the Ablex Publishing Corporation series on Human-Computer Interaction and has consulted and lectured for IBM, Control Data, General Electric, Honeywell, AT&T, Bell Labs, Citicorp and university research groups.

Q: How would you define the term "user-friendly"?

A: "User-friendly" cannot be defined in general – you have to look at it for a specific community and a specific set of tasks.

My favourite example is the Library of Congress' Scorpio bibliographic retrieval system, which has replaced the library's card catalogue for new entries and which is wonderful for the library staff, who take three to six hours of training and are frequent users.

With users walking in off the street, it's a challenge for them to become competent users in 15 minutes, so that strategy is not user-friendly to them (although Scorpio is user-friendly and comfortable for frequent users, such as the library staff).

So the term "user-friendly" is vague and misleading. People don't really want "friendly" systems, they want systems that provide service to them.

They want neither a pat on the back, nor a nasty comment; they want the machine to serve their needs, and they want to have control and mastery of the machine.

I try to stay away from the term "user-friendly" and to focus on specific ways in which the machine serves users – some are best served by a system that requires little training, while others will go through lengthy training periods so their performance can be fast with low error rates.

Some good examples of the latter are air traffic control systems, operating room personnel or nuclear control room operators.

There are some basic functional issues that must be attended to first in designing systems, such as the tasks that the system supports, the privacy-integrity-security questions, the issues of system availability and the cost of the system.

Once these basic functional issues have been addressed, we can talk about human interface issues.

Within the human interface, I try to focus people's attention on a specific user community and a specific set of tasks. When you've done that, you can measure user-friendliness by concentrating on (a) the time to learn, (b) the speed of performance of a benchmark set of tasks, (c) the rate at which people make errors, (d) subjective satisfaction, users' experience, and (e) human retention of those commands over time.

For me, user-friendliness is a function of these five – I keep coming back to those five as I evaluate and design systems.

Q: Why is user-friendliness so important?

A: As there are increasing numbers of products that provide the proper functionality, low initial cost, and privacy-integrity-security, the competition increasingly becomes over the user interface.

The ultimate cost of a system and its benefit to an organisation will be dependant on how quickly people can learn to use it, how fast they can perform their tasks, their satisfaction, etc.

Q: Then are you saying it is in the self-interest of system designers or sellers to incorporate user-friendliness?

A: Of course.

Q: Then it's your belief that making a system "user-friendly" is by no means an arcane, academic, difficult task – it's something users can do right now, in their own shop?

A: Absolutely. Not every study need be a three-month-long experiment with thousands of subjects. There are studies we do regularly that take 15 minutes and require six subjects.

The amount of effort you put into the user interface is a function of available funds and the impact of user interface on system performance. There are some cases where people are expending enormous efforts and millions of dollars on the user interface – Lisa is one example of that.

The competition is growing fierce and people's expectations are rising rapidly as they have examples of excellence in microcomputers, and from their growing experience with computers. And those organisations which do not have effective user interfaces will be at a loss in the competition.

I think we will see increased competition from Japan and we'll see exciting ideas coming out of the highly competitive microcomputer marketplace.

Q: How is it we've managed to get by for so long without "user-friendliness"?

A: The question is a little extreme, since there are examples around of good systems.

Up to this point, just the availability of a certain functionality, eg a certain database retrieval capacity, or a certain payroll function, was so remarkable, that manufacturers were able to sell the software and hardware solely because they provided the functionality.

But now, as competition heats up and there are multiple suppliers of that functionality, the competition will move towards providing a better user interface.

It's a maturing of the field, where buyers are more sensitive to the multiplicity of issues they have to deal with.

Q: What are some tools designers can use in designing user-friendly software?

A: The methods for interactive systems include things such as menu selection, fill-in-the-blanks and command language strategies. We have increasingly good understandings about how to design those systems competently.

A lot of menu systems we've seen so far have been rather poor, so the frustration frequent users have is understandable.

Any menu system must provide a shortcut path by which frequent users can go directly to the screen that they wish, rather than having to traverse through the menus. We're seeing a number of imaginative ways of arriving at that.

Another area, which is near and dear to my heart, as I discovered my own and other people's frustration, is error messages, such as "fatal error, run aborted", or "illegal command", or "OC7".

Some coded messages, such as OC7, do become meaningful and widely known once they're explained. But too many coded messages without explanations, or too many messages to remember, do become a serious source of difficulty.

We have studied that and measured increases in user productivity and satisfaction, so we know this does make a difference, and is a relatively easy thing to change.

I've been very satisfied that most designers I speak with find this a very appealing topic to get into, because they can make changes to systems that will improve systems with modest effort.

Error messages should be kept all in a single file, so it's easy to make changes and edit for consistency. In addition, putting all messages in one file would permit designers to take the single most important step forward in the error message area: keep track of frequency counts, to find out what are the 10 most frequent errors people are making.

I have yet to find a commercial system which on a regular basis provides a centre manager with statistics about what errors people are making.

Q: Couldn't you do that fairly easily in almost any MVS operating system?

A: It's not clear that you could. I've worked with Bill Mosteller at Boeing Computer Services who did put a patch into MVS to collect that data, but it was non-trivial to arrange.

He said there was some difficulty involved in getting a listing in an organised way, by which you could have frequency counts, etc.

But I think it's a useful and simple notion for designers of new systems to find ways in which all the error messages are in one place, rather than scattered through the code.

Q: What are some of the best examples you can think of today of user-friendliness?

A: I recently saw the Apple Computer Lisa system, which impressed me. The designers of that system thought these issues through very carefully and came up with a well-integrated, thoughtful design.

That's a good place to look – the (poorly designed) error messages are gone and there are more helpful, explanatory and positively-phrased messages.

I tend to find specific examples within different systems. For example, Control Data Corp's Plato system has many parts that are very nicely designed and appealing and that make it possible for a novice user to move successfully through sequences of courses.

I was also pleased by IBM's Interactive System Productivity Facility, which helps designers build interactive systems.

I think this is a trend for the future – ie using dialogue management systems to construct interactive applications systems – because there is so much to consider. It's helpful if you have a piece of software that helps you build an interactive system.

In fact, I think you'll see the emergence of dialogue management systems in the same way that database management systems emerged.

Q: What about BAL, JCL, Cobol – would you define those as user-friendly languages?

A: I don't think so. Those were early attempts at providing functionality in the simplest way and there is a lot of room for improvement in each of those languages.

Q: Can you give us two or three tip-offs that will tell a user or designer if a system is particularly "user-friendly", or particularly user-unfriendly?

A: The soft underbelly is important – error messages and error handling procedures are important to look at, because when something goes wrong, there is clearly a lack of knowledge, a certain dismay and confusion. The question is: "What do they have to do to get out of that trouble?" So I tend to look at the error messages and recovery procedures.

Another thing I look for is how the interface is for novice or intermittent users, compared with how it is for expert users. A well-designed system will serve all those communities, while other systems will be just for experts – requiring long training, etc.

I think it is possible to have, within the same system, rapid performance for the expert and clarity and simplicity for the novice.

This is the great challenge we are now facing, in how to build these systems, which offer what I call "graceful evolution" from the novice to the more frequent, more expert user.

You can accomplish this by allowing shortcuts for the expert, allowing the expert to string several commands together, and increasing the speed of interaction.

Novices are not necessarily pushing for faster display rates and faster response times. But the key thing here is process – the process of testing the system, what is the mechanism for feedback, and so on.

I tend to be more hopeful about a system if its design incorporates a mechanism for feedback, such as an online gripe facility or suggestion box, or online consultants.

The question is, how are the designers going to learn about actual users' performance?

Q: What about documentation – does the user-friendly concept extend to documentation?

A: Oh, definitely. We know that many documents and manuals that go with systems are poorly written, and that can make a 50% or greater difference in time of learning.

Typically, the best solution will be multiple manuals – there will be one short manual which introduces the system to the novice and gets him going, so the user is satisfied to be an expert at "level 1" rather than a vague feeling of knowing three of the 291 commands.

You can organise manuals to give the feeling of competence and teach what I call the "critical mass" of the system – that small subset of commands which allows the user to carry out some useful task.

Manuals should be written from the user's tasks into the system commands – not starting from a detailed, alphabetical listing of system commands.

Q: Is it a good idea to try to retrofit existing software to make it more user-serving?

A: This is a common problem which I deal with often. You don't want to change things too much, lest you disrupt the installed user base, but you do want to make evolutionary refinements that make it easier.

It is possible to do it – the evolution of Fortran to Fortran II to Fortran IV and now Fortran 77 is a good example; to make that kind of evolution, people do need data from experimental results.

My main message over the years has been, let's get out of this argument over which is more user-friendly or which is better, and put it on the basis of data, of experimentation, of science and engineering.

Many people perceive this (user-friendly or software psychology) field as simply argumentative stuff; I think we can turn it into a field with engineering and science behind it.

We are moving out of a phase of strapping feathers to our arms to studying aerodynamics and the physics of flight; and we're going to build 'planes that fly higher and faster.

Q: Does the attempt to make systems more user-friendly place an added burden on programmers?

A: I think so. I think the way to go about that is to decouple the user interface from the functionality.

I think traditional programmers and designers feel more comfortable with just providing the facilities; the user interface should be a separable component of the software. It should be easy to change error messages or commands, whether we use a mouse or a light pen or a touch screen.

Those things should be very much isolated from the underlying functionality, so that as new hardware appears and new techniques are invented, we can easily bring them into systems, rather than having to rewrite systems. Decoupling the user interface design from the functionality of the system is a critical issue in software architecture.

Q: Are there any things users can do right now to increase the user-friendliness of the software they are designing and writing?

A: Several things have been mentioned already – look at the structure and content of the error messages; screens, if used, should be consistent in terminology, format and layout; menus should be standardised, for example, a title centred on the top, and with numbered or lettered items and a prompt at the bottom saying "type the number or letter and press enter". There should be a consistent style, and so on.

Let's go back to the (system design) process – in every system there should be a design document for the user interface, separate from the functionality.

The interface design document should be reviewed, and it's possible to do pilot studies for system components, with paper and pencil or mock-up prototypes. They should be a rigorous acceptance test in every system. It should say, for example: "when you're finished, you should take a typical users and, after m minutes of training, they should be given a benchmark set of tasks to perform, and they should be able to perform those tasks within p minutes, making fewer than e errors."

Q: Someone observed to me yesterday that some of the naive users of the user-friendly software on his mainframe had trouble connecting that user-friendliness to their bill at the end of the month. Can you comment?

A: I'm sure there are cases where a better interface package has poorer performance, but in my mind there's no unavoidable linkage or law why it must be so.

I think, overall, the cost to the users in terms of errors they make with the non-user-friendly system and the difficulties they have makes it very expensive to an organisation. I see no additional cost in having a polite and constructive message, as opposed to a nasty and hostile message.

In fact, I see costs reduced by having simpler and more effective command languages.

Many studies show that people finish their work in less time, issue fewer commands and make fewer commands mistakes (with well-designed software); so the potential is that user-friendliness will result in reduced long term costs.

Q: Are you saying, then, that people designing and selling software today face a good opportunity to come out with software that really will be user-friendly?

A: We have more than an opportunity to do well – we have an obligation to do better.

SHNEIDERMAN . . . "The question is, how are the designers going to learn about actual users' performance?"

"The competition is growing fierce and people's expectations are rising rapidly from their growing experience with computers. Organisations without effective user interfaces will be at a loss in the competition"

"We know that many documents and manuals that go with systems are poorly written, and that can make a 50% or greater difference in time of learning. The best solution will be multiple manuals"

The man who's in love with the three-dimensional world

Is 3-D about to come of age? Datascan's Jeff Corsiglia believes so

AT 36, Datascan's video game division vice-president and general manager, Jeff Corsiglia, is every bit the real-life counterpart of the computer maverick and video game designer who was portrayed in the sci-fi Disney film Tron.

For the past three years, Corsiglia has applied his imagination and determination in an attempt to propel Datascan's video game division to the forefront of video game technology, culminating at this year's CES show where the three-dimensional "Imager" that Datascan helped develop for GCE's Vectrex home video arcade system was unveiled.

Corsiglia discusses Datascan's development of the 3-D Imager in this interview. He also talks about the state-of-the-art in video game hardware and software.

Q: The 3-D Imager seems to represent the state-of-the-art in video game design. What are your feelings now about the Imager specifically, and about the future of 3-D in general?

A: This seems to be the year of 3-D. The most striking thing about the Imager is that it works with the Vectrex vector system exclusively.

The vector system draws a very bright, intense line on the screen unlike raster systems which are found in most home TVs. It's difficult to get convincing 3-D with a home TV set. By comparison, Vectrex has its own built-in screen that performs a line-drawing function against a blank background so that the video objects appear to be floating in space.

When these bright, intense lines are processed through the Imager, the colours, and the sense of space and depth that the 3-D image provides are very, very strong.

Overall, we're in love with 3-D. We see 3-D being very important to video games and to other forms of entertainment. As for the future, we're currently researching other modes of 3-D.

Q: How did Datascan first become involved with the design of the Imager?

A: We had been designing games for several video game systems including the Vectrex system, and it became clear to us that this unique line drawing capability could be exploited in a 3-D mode very effectively.

Q: You ended up with a breakthrough opto-mechanical system?

A: Well, yes, the conceptual leap here was taking the rotating optical path device and incorporating it into the glasses to make it practical. The actual design of this device allowed us to generate a low-cost, feasible 3-D device for the home.

"You begin to see where video games are heading when you hear stories about the amazing military simulators, when you begin to think about things like biofeedback"

Q: Looking at the video game industry as a whole, where are we at this particular point in time?

A: Right now, video game design is really at its earliest stages. You begin to see where video games are heading when you hear stories about the amazing military simulators, when you begin to think about the potentials for video disc, when you begin to think about things like biofeedback. Electronic entertainment has a lot of different directions to grow in.

Q: Datascan occupies a unique position in which to serve the needs of video game manufacturers. I understand you can provide both original game concepts as well as games to meet custom specifications?

A: Most manufacturers, when they go "outside" for video games are looking for complete packages. They want design, programming, . . . the whole thing in a nutshell.

Datascan can accomplish this and also accommodate approved, proposed programs in storyboard form. We've worked on licensed concepts, for example, where a manufacturer has acquired 10 licenses from coin-op games and can only program five in the amount of time alloted.

This time-pressure syndrome can often compromise the quality level of the game, through no fault of the manufacturers themselves.

My proposal would be that manufacturers consider outside video game designs in the same sense that they might use an architect.

Use a group with extensive video game experience to provide initial video game concepts. These would be conceived in consultation with programmers who are well-versed in all of the development stages.

The end-result would be a workable game concept as opposed to a fantasy sheet. The marketing arms of the manufacturer can then pick and decide which games best suit their line.

Q: You seem to heavily emphasise the aspect of concept evaluation. What steps do you take in evaluating a prospective game concept?

A: First and foremost is feasibility. It's very easy for non-technical people to fall in love with an idea.

Since the actual programming process is understood and practised by very few people, collaboration between programmers, graphic designers and game play experts is critical.

Marketability is also imperative. And that goes hand-in-hand with playability. We have to remember that a video game is a toy. It is an interactive device that somebody plays with. You don't sit back and passively view the video game, you must interact.

That means the game must have play value. Unfortunately, that playability has been conspicuously missing from several famous, recent video games with super-hot titles and tremendous amounts of marketing horsepower.

These games burn-out quick because they are lacking playability. That's the bottom line. The strongest way to market a video game is on its honest playability.

Q: Datascan is also deeply involved in educational software. Is there a different orientation to educational video games?

A: In the past, educational software has not been terribly exciting and I think that is unfortunate. There's something about the way a video game functions that appeals so fundamentally to a child that effective play elements need to be applied to educational software.

We've been working very closely with several experts in the educational field to develop a number of lines of educational software for video games, home computers and CP/M-based computers.

We're targeting the video game educational programs at pre-schoolers and very young school-age children because of the ease of using the system. These products will be tested first in educational laboratories.

Their teaching objectives and their ability to meet those objectives will be quantified before we consider the marketing of any particular program.

Q: Another key area for Datascan is the adaptation of film themes to arcade and consumer game formats. What are your objectives in this market?

"We have to remember that a video game is a toy. It is an interactive device that people play with"

A: Our feeling is that most of the adaptations of film themes have been poor. The principal reason is that film material does not automatically translate to video game material.

You have to look for video game-like behaviours which can be adapted to video games and can be used as building blocks for a good video game.

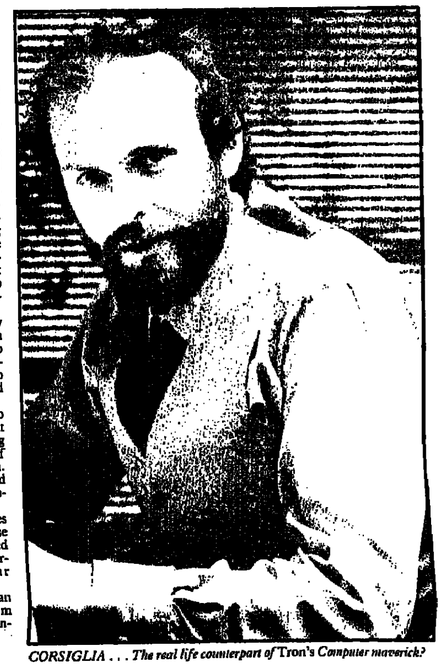
We've had success ourselves in doing these adaptations and we feel that if people who have film material want to assess its appropriateness for adaptation, we can certainly be of service.

Q: You're looking for playability again?

A: You have to remember that video games right now are just third generation versions of Pong. You have a couple of objects on the screen that are exhibiting some interesting behaviour, and you have some influence over those behaviours. That's a far cry from a movie.

So, we're looking for things that bounce, or things that bobble, that could be hiding anywhere within a motion picture.

I mean, the conversion of *Star Trek* or *Star Wars* is obvious, but what do you do with *On Golden Pond*?



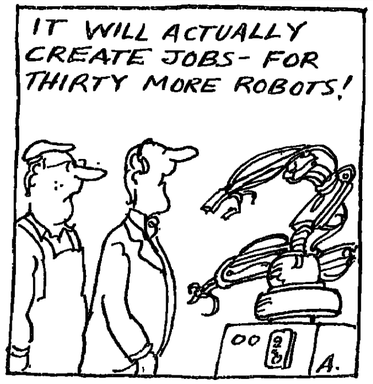
CORSIGLIA . . . The real life counterpart of Tron's *Computer maverick?*

The "maverick" at work.

A scene from Tron, *which features Corsiglia's fictional counterpart.*

BOOKS

How life at work is always changing



Computerization of Working Life. Edited by E. Fossum. Ellis Horwood.

ONLY two out of five chapters live up to the expectation generated by the title of the book Computerization of Working Life.

The book, a collection of papers by researchers at the Norwegian Computing Centre, is number 24 in the series Computers and Their Applications – and it suggests that the series is becoming rather tired.

The book takes a long time to get going. There is a foreword; then a preface; then an introduction.

It is page 21 (out of 143) before the first paper appears.

The best chapters are numbers two and three.

The first is on the impact of technology on employment, with some hard facts and figures leading to, unfortunately, a rather depressing conclusion.

The other is on working with display terminals. It describes the usual staff complaints and problems and considers ways of avoiding the troubles, or suggests ways to solve them.

At the beginning the authors are described as researchers of distinction. It is a pity that most of their papers do not live up to that distinction nor to the promise of the book's title.

John Kavanagh

Manage the people in computing

Needed: Professional Management in Data Processing. John Callahan. Prentice-Hall.

"HOT-SHOT technology performers do not necessarily make sound managers." That is the parting shot from John Callahan at the end of his book, Needed: Professional Management in Data Processing.

The message comes through loud and clear throughout an excellent, extremely readable book which deals with the management of the data processing department – the people – and barely mentions computers at all.

Callahan takes a negative approach almost throughout: he describes typical management methods and the assumptions managers have about different types of people working for them – and shoots all these methods and assumptions down in flames.

Here lies the book's possible weakness. Some readers could be irritated and frustrated by this constant criticism of their methods.

But the way Callahan exposes typical management shortcomings, often with a series of questions, makes the serious reader stop and think deeply about the way he or she works.

In 195 pages Callahan covers staff selection, motivation, career prospects, performance evaluation, planning and project control, dealing with problem staff and the data processing industry's disease of burn-out.

Callahan's book should be recommended reading for all data processing managers who want to get the most out of their staff and at the same time keep them happy – or just keep them.

John Kavanagh

Crisis can be avoided when developing software systems

Formal methods of Program Verification and Specification. Berg, Reebert, Franta, Moher. Prentice Hall. **Software Verification and Validation.** Deutsch. Prentice Hall.

THE justification for both of these books is that the development of software systems has not always proceeded to a satisfactory conclusion.

Systems have been implemented late, over cost and, in particular, with significant faults still present. Both works mention the "software crisis" and both attempt to introduce various potential methods of avoiding it.

Berg *et al* deal with the theoretical application of formal mathematical reasoning to the development of software. This applies mainly to the verification stage of software development.

In order to prove a program mathematically a complete definition of correctness is required. The authors therefore introduce techniques of formal specification as well as validation.

Whilst obviously containing mathematical arguments, the book can be read and appreciated for its ideas and concepts. It is well structured and surprisingly easy to read considering the complexity of the subject.

The authors do not actively prescribe, they describe as they understand the problems of practical implementation.

However, as a source of information on this increasingly relevant area the book is excellent.

Each chapter is preceded by an introductory general section and a summary follows. The index is well constructed and follows a comprehensive list of reference.

It is unlikely that formal mathematical specification and validation will be practical in a wide sense until formal specification and programming languages are used more generally. Perhaps fifth generation computing will be able to take advantage of these techniques.

Anyone interested in computing developments or wishing to introduce themselves to formal verification can approach this book with confidence. Its clear structure and understandable text provide an excellent introduction to the subject.

Deutsch's Software Verification and Validation, whilst addressing the same problems, takes a much more pragmatic view.

Published as part of Prentice Hall's software engineering series it is designed for practical use.

In this respect it has one disadvantage – it is not easy to read or understand. The practising manager will find parts of the book heavy going.

Nevertheless, perseverance will be rewarded with valuable insight into avoiding the pitfalls of software verification.

The first part deals with the concepts of software validation including an overview of the remainder of the book. Deutsch explains the enormity of attempting to test completely all paths through a program and introduces more pragmatic methods.

Part II describes various testing methodologies – in particular the use of the SVD (System Verification Diagram), refined by the author's company, Hughes Aircraft.

The SVD represents the software requirement completely and consistently, so that the results are testable.

The method described is based on testing small elements as they are built, not attempting to test the whole system at the end. The special problems of real-time, etc other particular systems are explained and recommendations made.

Automated testing using various tools at various stages is described in the third section, which also stresses the importance of defining partial testing at the onset.

All software life cycle stages should take account of the need to verify and validate. Part IV puts testing into the context of various project stages and illustrates the well known principle of detecting errors as early as possible.

Finally, the author considers future trends in both the managerial and technological areas.

Software Verification and Validation is a valuable aid to practising managers and technicians, as well as students of computing. However, it requires careful reading and analysis in order to gain useful information.

Formal Methods of Program Verification and Specification is interesting and would be of use to anyone who wishes to be well informed in this new and developing field.

W. B. Scott-Jackson

Defining the principles of securing private data . . .

Principles of Data Security. Ernst Leiss. Plenum Publishing. $25.

COMPUTERS are being used to hold more and more information of a private or confidential nature. Credit information can be obtained by various agencies; hospital records, personnel files and so on hold personal data in relatively centralised databases; and social surveys involve statistical analysis of large bodies of information.

In addition the methods of accessing such information are becoming much simpler to use. Enquiries can be made on many keys using English language instructions (eg the Atomic Energy Research Establishment's Status or ICL's CAFe).

A great deal of private data is therefore available and is mechanically easy to get at. In these circumstances, security becomes of crucial importance.

Principles of Data Security addresses this vital area of computer science.

Dr Leiss is able to present complex theories in an understandable way.

This, combined with his concern that the theories should be practically applicable, makes the book interesting reading.

Occasionally his undisputable conclusions are quite startling. For instance, as a layman, it is surprising to find that one's intuitive belief that statistical analysis cannot break individual confidentiality is incorrect.

Methods for preserving that confidentiality are given. Other areas covered include authorisation systems, key specified systems, cryptography and digital signatures.

In common with many other theorists Dr Leiss tends to use two words where one would do. Such phrases as "Thus we submit that we have here a case at hand where . . ." do not aid understanding. New word constructs such as "undecidability" can also detract from the text's impact.

As a computer scientist Dr Leiss fully appreciates the time lag between the acceptance of academic theory and its practical application.

His book may serve to accelerate the process, because of its practical orientation.

It is intended for professional system analysts and data managers as well as computer scientists.

Analysts and managers might be unwise to wait for the next stage in the movement from theory to practice.

In the same way that complex theories finally emerged as practical guidelines for structured programming, so will guidelines for database security be developed given time.

W. B. Scott-Jackson

. . . and history of their abuse

Computer Insecurity. Adrian Norman. Chapman and Hall. £14.95.

TO SAY that computer insecurity is modern would be denying much that happened during the early days of computing. Right from the early days unscrupulous people have looked into ways of making easy money from their installations.

Adrian Norman is an acknowledged expert in computer security, and in taking over 10 years of research he has compiled an excellent guide for all computer users.

Although some of his points are not really relevant – appearing to be nothing more than padding – he provides a sober insight into the dangers in data processing.

His ambition to make computer security more scientific and less theoretical seems to be a little idealistic, but, with more documentation such as this book, it may slowly happen.

The author also hopes that if computer crime is better reported, subsequent tighter security will cause a decline in such crime similar to the control of hijacking since the '70s.

The case histories he quotes are by his own admission not all true stories, but he feels that the lesson in them outweighs the fact.

He draws a parallel between cracking a safe and cracking an operating system or database, which illustrates the quality of his writing, and although the book would have benefited from more photographic evidence, he avoids using jargon as much as possible.

After examining the reasons and motives of each case quoted, he suggests ways that might be used to prevent any recurrences. His ideas will make this book a standard reference for the future computer user.

Colin O'Keefe

Two dates to remember

The importance of software in the computer market place, as the part of a computer package that actually brings the system alive and meets the customer's applications has never been greater – that's why you should make a diary date now not to miss two very important events:

NOV 15-18'83
Software Village
at
COMPEC'83

1: First is the Software Village at Compec '83 which is greatly expanded on previous years and will be an integral part of the Show in the West Hall section of the Grand Hall, Olympia, London, November 15 – 18 1983.

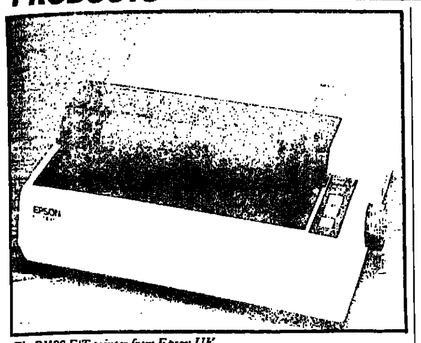
JUNE 5-7'84
software '84

2: The second is the recently announced new Software '84 exhibition and conference. A show devoted entirely to the subject of business and professional software at Earls Court, London, June 5 – 7 1984.

Both shows are organised by Reed Exhibitions, the country's largest business exhibition organisers, and sponsored by Computer Weekly and Software in association with Systems International, Practical Computing, Micro Business and Computer Talk.

For more information contact the Exhibition Manager, Compec '83 or Software '84, Reed Exhibitions, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ. Telephone: 01-643-8040.

PRODUCTS



The RX80 F/T printer from Epson UK.

Epson adds to printers

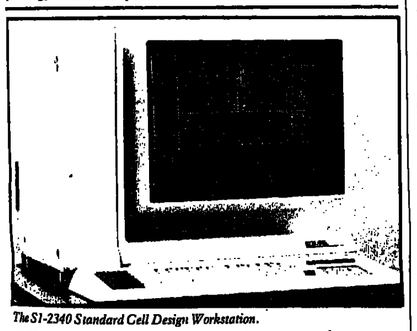
EPSON (UK) is launching a printer to complement its existing range.

The new printer, the RX80 F/T is claimed by Epson to fill a customer need for a printer with all the features of the RX80 but offering both tractor and friction feed.

Priced at about £350, the RX80 F/T has dot addressable graphics, condensed and double width printing, Centronics parallel interface as standard and a print speed of 100 characters per second.

Friction feed facilities allow single sheets of paper to be used, making the printer suitable for production of standard letters and presentation documents.

Epson (UK) (CW), Dorland House, 388 High Road, Wembley, Middlesex HA96UH. Tel: 01-902 8892.



The S1-2340 Standard Cell Design Workstation.

Versatile workstation

THE SL-2340 Standard Cell Design Workstation from Silvar-Lisco is said to be the first workstation to combine data capture, simulation and standard cell layout tools.

The turnkey system offers fast standard cell integrated circuit development, from logic design and simulation to physical layout using "efficient placement and routeing software" say the manufacturers.

Priced below $100,000 (for single unit quantities) the system combines many design tools such as schematic editing, netlist extraction, hierarchical database, hierarchical design expansion, logic simulation, standard cell placement and routeing.

Optional design tools include fault simulation, system and register-level simulation. Timing verification will be available soon.

Integrating a subset of Silvar-Lisco's SL-2000 Integrated Design System and the Powerful Apollo DN300 computer, the SL-2340 claims to be a price-performance breakthrough for standard cell design systems.

Silvar-Lisco continues to offer the same software capabilities of the SL-2000 system on DEC/Vax, Prime and IBM computers. Additional application specific workstations will soon be introduced.

Silvar-Lisco (CW), 3172 Porter Drive, Palo Alto, California 94304.

Blue Box interface

TWO fibre optics communications products have been introduced by Lightdata.

The Blue Box is a 16-channel RS232 interface that is said to be simple to install and use. The received light power is displayed and can be used to set up and monitor the performance of a fibre optic link of a kilometre or more.

The Blue Box is housed in a die cast box and intended for mounting on walls.

Lightdata's other product is a 16-channel full duplex fibre optic/TTL interface.

Output power is adjusted through the front panel and received power is displayed on the bar LED meter.

Lightdata (CW), 4 Lias Road, Porthcawl, Mid Glamorgan CF36 3AH. Tel: (065671) 6114.

Software for the HX-20

TRANSAM has produced a machine code program in ROM which can either be installed in the main body of the HX-20 or the expansion unit. The software has two parts. One is an editor, the other a program which enables the HX-20 to act as an intelligent terminal.

The ROM transforms the HX-20 into a communications link. The link may be made via a cable, or via a telephone line. A battery powered acoustic coupler is available from Transam.

The text, once prepared, is saved to a file and can be sent using the terminal, or alternatively can be printed immediately on various choices of printer.

Transam Microsystems (CW), 59/61 Theobalds Road, London WC1X 8SF Tel: 01-405 5240.

Short cuts for systems designers

PROTEL Computer Systems has launched a new stage of its development with the announcement of ready-made printed computer circuit boards.

The Protel design team has several substantial orders to its credit since the company went operational in October 1981, including an extensive operations support system for TV-AM and a lines scheduling system for the British Independent Broadcasting Authority. This phase of development has made available for sales not only the five functional systems provided to TV-AM, but also virtually all the individual building blocks required for the 25 other functional systems so far identified.

One of the products that Protel now markets in its own right is the basic Protel Model 2000 printed circuit board, based on the advanced 16-bit Motorola 68000 microprocessor. This has led to a high-performance range of boards with wide applications in the component market for the systems designer and are particularly suited to process control and to industrial educational and certain computer functions.

Built on extended double Eurocard and implementing the VME bus, the boards are proven in Protel's own systems, used in the professional television and broadcast industries. Now available are CPUs featuring RS422A and RS232C ports, seven interrupt levels and 32 bytes of static RAM or 64 bytes of EPROM; dynamic RAM units up to 512Kbytes, bytes parity check and on-board refresh; and serial I/Os with eight serial ports, RS232C or RS422A, programmable baud rates and direct memory access.

For designers intending to develop a local area network further boards are available to allow for the incorporation of a comprehensive interface Ring I/O System known as Cumspeed.

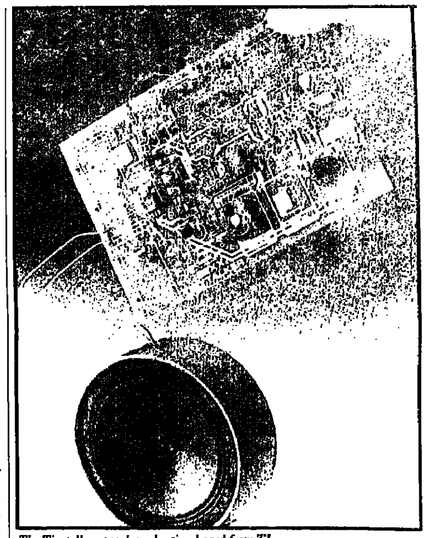
Developed by Protel engineers, the Comspeed Ring is a serial communication system which permits computers and other devices to be interconnected, and embodies the principles of the Cambridge Ring. Messages are sent around the Ring serially in packets of 38 bits, each packet conforming to a standard bit format. The data rate can be up to 10Mbits per second.

The Ring consists of two pairs of serial circuits, primary and secondary, each carrying composite data and clock information together with the 50V supply, which is used for powering ring repeaters.

The Ring can also be of the braided variety which allows localised faults to be easily bypassed.

The Comspeed Ring I/O system utilises a Ring I/O board, containing 68000 microprocessor and interfacing for the VME bus and the two I/O ports. This board is used in conjunction with the Protel Ring Repeater Board 2015 or 2020. The Model 2015, providing eight ring outputs, can support up to 16 ring nodes, while the model 2020 gives a single ring port and is the sister board to the Comspeed Ring I/O Board.

Protel Computer Systems (CW), Waterford House, Erfitstadt Court, Denmark Street, Wokingham, Berkshire. Tel: (0734) 785440.



The Tinytalker speech evaluation board from TI.

Male or female speech

TEXAS Instruments has produced a new version of its Tinytalker speech evaluation board. It incorporates the TMS52XX, an 8-bit compatible LPC (linear predictive coding) synthesiser chip capable of producing "male" and "female" speech.

The module will speak any one of eight pre-selected phrases at the touch of a button. It powers-up automatically for speech output, and powers-down on completion of the selected phrase.

This allows the use of batteries (2 x PP3) for module power supply. Alternatively a single-rail supply of 12-18V may be used.

The module is self-contained, with a speaker and power amplifier capable of delivering up to 1.5W. A miniature jack for the connection of an external speaker and a volume control are provided. A two-hole filter is used to eliminate sampling noise from the output of the TMS52XX's digital-to-analogue converter.

Priced at £68.75, the board comes with an evaluation EPROM (comprising four female and four male phrases).

TI says that other phrases can be processed by its Portable Speech Lab analysis system.

Texas Instruments (CW), Manton Lane, Bedford MK41 7PA. Tel: (0234) 67466.

Microfilming as a matter of form

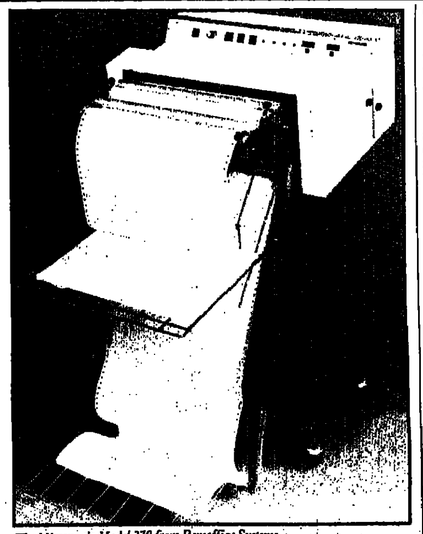
THE Micromatic Model 370 continuous forms camera is capable of filming forms up to 14.5 inches wide at 24x, 28x, 35x or 40x reduction.

With this reduction facility, the Model 370 gives the user the opportunity of recording from 2,500 to over 4,000 11in forms on 100 foot of standard film at the rate of over 100 forms per minute.

At no extra cost to the user, interchangeable forms feeds can be fitted to the Micromatic continuous forms camera to cope with feeding single documents. An automatic exposure control and a built-in blip feature on each frame are included in the basic price of £3,250.

The dual purpose Model 370 is designed for companies or organisations which have computer print-outs and continuous stationery such as invoices, statements, listings, etc which are required to be stored on microfilm for security or as the alternative to bulky paper files. Additionally, the equipment will film single sheets.

Remoffice Systems (Bristol) (CW), Vale Lane, Harteliffe Way, Bristol. Tel: (0272) 662331.



The Micromatic Model 370 from Remoffice Systems.

Turtle comes in a low-cost version

JESSOP Microelectronics, manufacturer of the Edinburgh Turtle mechanical robot, announces the introduction of a £165 low-cost version.

The considerably reduced price has been achieved by re-designing the computer interface so that it now operates in a parallel mode, rather than Serial RS232. This in turn has necessitated the development of several interface types, each designed for a particular microcomputer. These will be incorporated into the computer connection cable junction box.

The Turtle itself will be identical for all computer types.

Interface sets will be produced initially for the BBC computer and will soon be followed for the RML and Sinclair machines.

The Edinburgh Turtle was developed by Dr Jim Howe and his team at the Artificial Intelligence Department at Edinburgh University, and is manufactured under licence by Jessop Microelectronics.

Jessop Microelectronics (CW), Unit 5, 7 Long Street, London E2. Tel: 01-739 3232.

Image processing software updated by Toltec

TOLTEC Computer, manufacturer of the DataRing local area network, has announced a new release of the Semper package for image processing, analysis and simulation which, it claims, provides the user with advanced, fully interactive image processing facilities in an easy-to-use system.

Semper V is said to be suited to a variety of image processing fields. Recent applications include electron microscopy, research into visual perception and synthetic aperture radar processing.

Semper V, written in Fortran IV, can be run on a wide variety of computer systems. Commands may be entered interactively at the terminal or combined in Semper programs, and the package can be modified easily by the user to incorporate special processing commands if required.

Semper V's features include procedures for grey-level manipulation, arithmetic, averaging, alignment, filtering, Fourier transforms and correlation; a choice of display modes including contour maps and perspec displays; and a spot or crossw cursor to indicate positions wit pictures on a display screen.

Use of magnetic tape for ad tional or archival storage is ava able.

Toltec Computer (CW), Thompson's Lane, Cambr CB5 8AQ. Tel: (0223) 312347.

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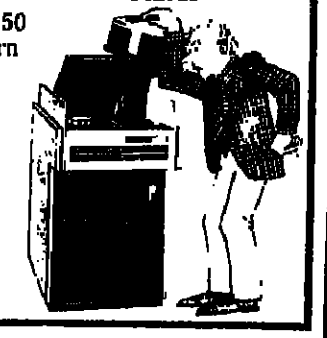

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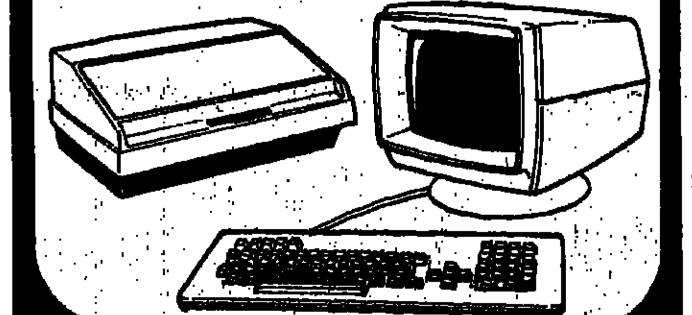

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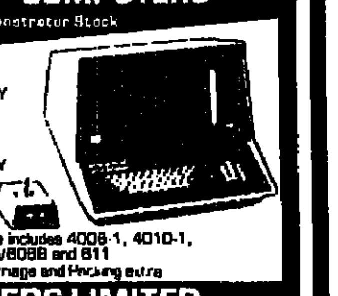

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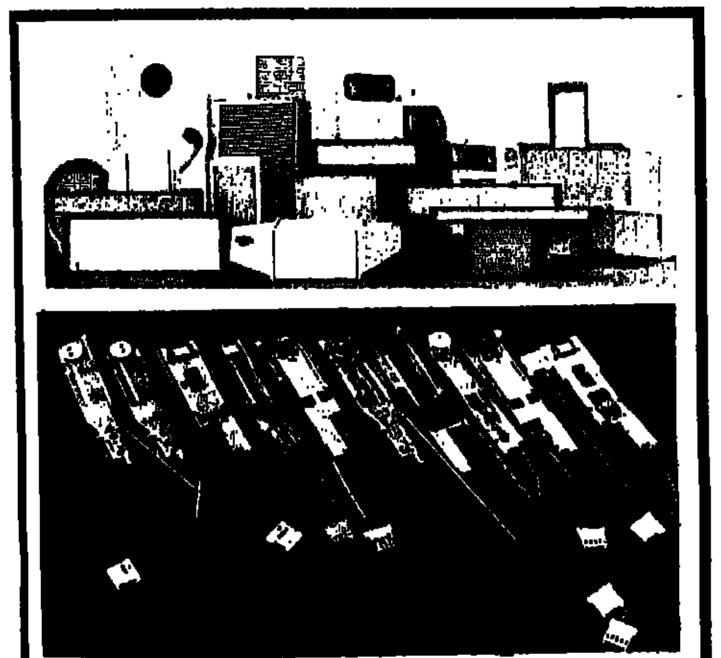

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FIVE printers for the Sirius and other leading microcomputers have been introduced by Applied Computer Techniques' new subsidiary, ACT (Office Products).

The Writer 10, 12, 14 and 20 are matrix printers and the Writer 30 is a daisywheel unit. There is also an automatic single sheet feeder at £595.

The Writer 10 runs at 120 characters a second and can handle up to four-part stationery. It costs £395. The Writer 12 has a 136-column carriage which can take continuous stationery with widths of up to the full 15 inches. It costs £695.

The Writer 14, at £1,295, is for heavy-duty work at 150 characters a second. It can take up to five-part stationery sets. The Writer 20 can be switched between fast, draft and correspondence speed printing. It costs £995. The Writer 30 daisywheel printer costs £1,395. All prices are exclusive of VAT.

Further models at the top and bottom of the range will come later.

"In the past customers have been left far too much to fend for themselves on the printer front," said ACT (Office Products) sales manager Ray Parsons. "From now on we shall be taking a very close interest, concentrating not only on supplying hardware to dealers but also on supporting the user with fast maintenence.

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ACT (CW), ACT House, 111 Hagley Road, Edgbaston, Birmingham B16 8LB. Tel: (021-454) 8585.

Low-cost laser printer

THE Business Systems Division of Sintrom Electronics has launched a low-cost laser beam printer and plotter, the LBP, which is said to bring the versatility and quality of laser printing within the size and price range of the smaller business system.

A choice of interfaces enables the printer/plotter to interface with any computer.

The LBP desk-top page printer is targeted at the preparation of reports and documents and for such applications as data processing, work processing, graphics, facsimile and electronic mail. It can print high quality graphics and typewriter quality alphanumerics in a choice of fonts on standard cut sheet plain paper at line printer speeds of 10 A4 size pages a minute.

It can also print at right-angles to the direction of paper feed without changing the paper.

Two models of the LBP Printer offer interfaces enabling it to be connected to any computer. The Model LBP-10 uses a special interface which converts a digital video signal to modulate the laser. The Model LBP-10M1 includes Serial RS232C and Centronics parallel interfaces.

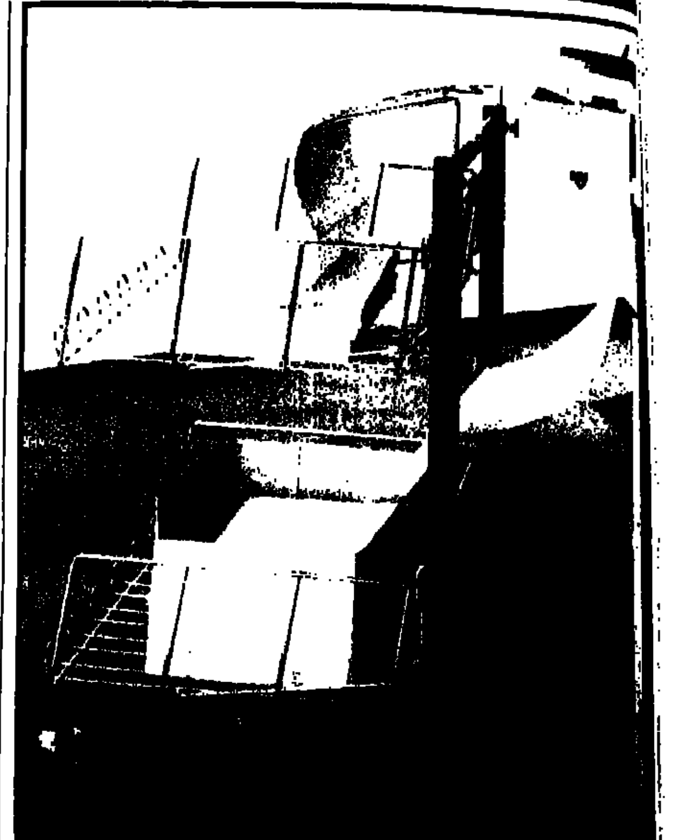
The compactness of the LBP results from the use of precision high technology which includes semiconductor laser beam recording and high precision scanning optics for use with lasers.

The printer is quiet in operation and reliable, says Sintrom, and there is a built-in diagnostic function to tell the operator exactly where any problem is located.

Sintrom provides service support throughout the UK.

Sintrom Electronics is a member of the Sintrom Group of Companies.

Sintrom Electronics (CW), 14 Arkwright Road, Reading, Berks, RG2 0LS. Tel: (0734) 875464.



The 752 computer trolley from Mailtronic.

Stationery on the move

A PRODUCT designed to aid the flow of computer stationery in and out of the printer is the 752 computer trolley from Mailtronic.

With an upper and lower basket, stationery is fed from the lower through the printer and then into the upper. Paper is stacked in the correct sequence, and a top guide adjusts up or down to ensure it stacks evenly. Both baskets are also adjustable.

It has two fixed feet to make certain the unit stands firmly in one spot while in use, with two swivelling castors at the other end making it fully mobile.

It is about 2ft6in (75cm) high and occupies a floor area of 19½in (50cm) by 19in (48.5cm). The price is £95.

Mailtronic (CW), 300 Neasden Lane, London NW10 0AD. Tel: 01-450 5312/7.

High speed data access system

MIDASPLUS, Multiple Index Data Access System, is a new data management software system which runs on the entire range of Prime computers. It enables the user to create and maintain complex data structures from the terminal, quickly and easily, says Prime.

Midasplus file structures are compatible with the sequential, relative and indexed file structures available with the Prime File Management System, FMS, and with all Prime languages.

In distributed data processing applications, a program running on a local Prime system can access Midasplus files stored on a remote system via Prime's networking software Primenet. The local program references the file, and Primenet handles the protocol details involved in managing the data transfers. Data files are stored centrally or distributed according to program requirements.

Users can access data records through up to 18 separate indexes to files consisting of fixed or variable length records. The indexes each contain a list of keys.

Prime Computer (CW), The Hounslow Centre, 1 Lampton Road, Hounslow, Middlesex TW3 1JB. Tel: 01-572 7400.

Board with VME bus interface

A COMPUTER board which features the 16-bit Z8001 microcomputer and VME bus interface capabilities for use in high-performance multiprocessing systems, has been introduced by Hi-Tech.

The new ARC 8000 single-board computer incorporates on-board RAM and EPROM as well as serial and parallel input/output interfaces, and it can also be combined with analogue input and output boards to form the heart of an industrial control system.

Two RS232 channels provide interfaces to printers and other peripheral devices, and the 24 input/output lines can be used with a variety of other boards for analogue/digital or digital/analogue conversion, digital and power inputs and/or outputs, IEEE-488 interfacing and EPROM programming.

Software included with the board includes a 4 Kbyte monitor in EPROM, allowing memory and register examination and modification, breakpoint setting, single stepping, EPROM programming and downloading from host systems.

Hi-Tek Distribution (CW), Trafalgar Way, Bar Hill, Cambridge, CB3 8SQ. Tel: 0954 81931.

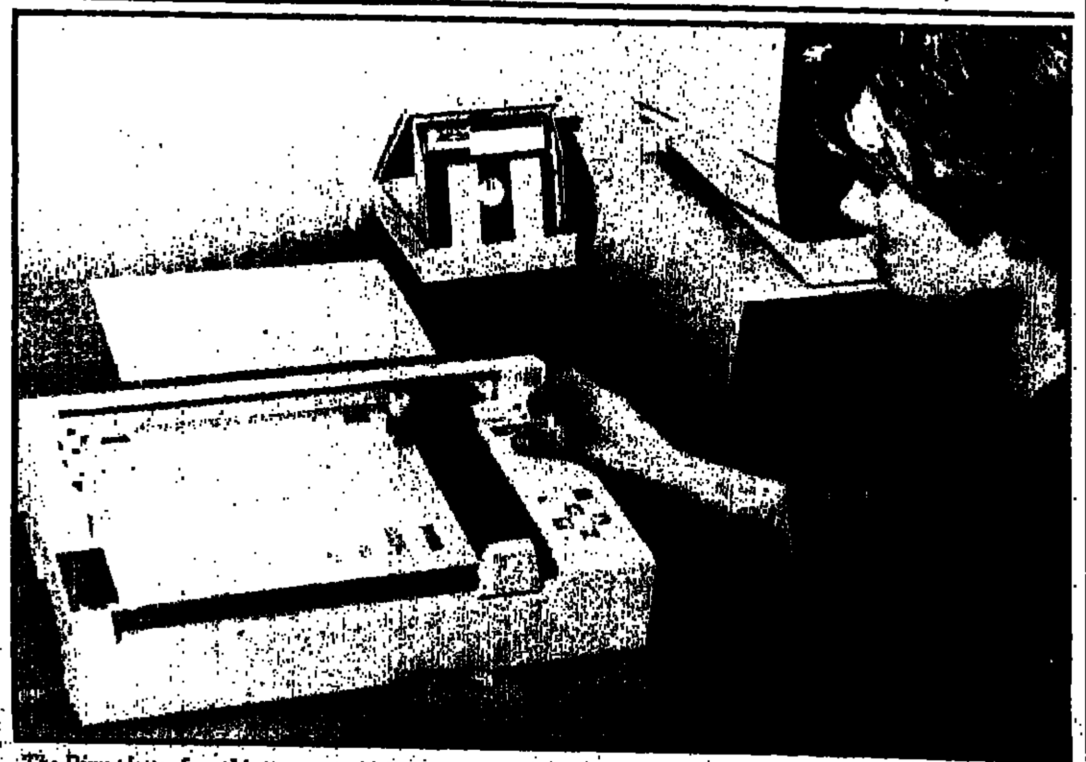
Pixy offers personal plotting

MANNESMANN Tally's new Pixy III graphics plotter offers plotting capability to the personal computer or small business microcomputer user.

Many advantages are claimed for the Pixy, including a flat bed to eliminate skewing, and three pens with automatic penchange for multi-colour applications.

The Pixy has local intelligence through a standard Z80 processor, which provides plotting features normally associated with plotters costing twice as much, says Mannesmann Tally. Such features facilitate the simple operation of features like circles, arcs and curves. The Pixy Plotter also has nine international character sets, the Greek alphabet and scientific symbols.

Mannesmann Tally (CW), Molly Millars Lane, Wokingham, Berks. Tel: (0734) 788711.



The Pixy plotter from Mannesmann Tally.

Nixdorf launches an entry level distributed workstation

NIXDORF Computer has launched the 8870 Model 5, the smallest of the 8870 range of systems.

The Model 5 floppy disc system is a small, powerful desk-top computer, compatible with the other systems in the 8870 range. It provides powerful interactive and local processing capability for distributed data processing applications, says Nixdorf.

The Model 5 can be used as a processing system where the floppy disc storage capacity is sufficient to keep programs and data online ready for direct access. It is also possible [illegible] ties of data offline on floppy disc, for processing when it is needed; for instance, for payroll or accounting statistics.

Data communication is supported through the Programmable Line Controller, which supervises interchange of data between the Model 5 and other computer systems in a distributed network.

The Model 5 provides 256 Kbytes of main memory, supported by two 1.1 Mbytes interactive floppy disc drives in a desk-top unit. Two of Nixdorf's standard local screens are supported, each with a capacity of 2,000 characters [illegible]

The keyboard, divided into typewriter section and numeric keypad, is movable for operator comfort.

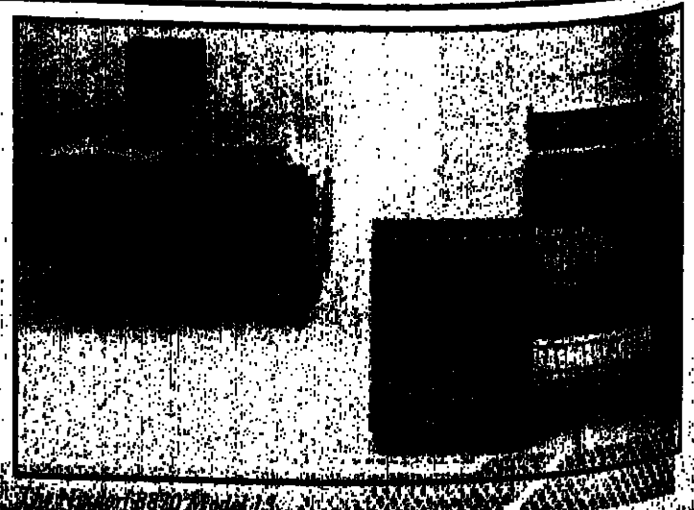
Nixdorf's recently launched Mini-Compact needle printer offers facilities that make it an ideal output device for the Model 5. It operates at 80 chps with up to 132 column carriage width, and can process either continuous stationery or single sheets.

The 8870 Model 5 supports the Nixdorf multiprogramming operating system which enables, for example, data entry to take place at a display workstation at the same time as information is being output on the printer. In addition the system supports the Tamos operator system which controls and logs events on a day-to-day basis, and carries out the necessary back-up.

The Model 5 uses Business Basic, which is employed throughout the 8870 range of computers.

It is particularly suitable for fast programming and makes good use of the system's interactive characteristics.

Nixdorf Computer (CW), 125-135 Staines Road, Hounslow, Middlesex TW3 3JB. Tel: 01-570 1888.



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– planning and organising the work of a 6-member team through all stages of project development
– undertaking major tasks within the feasibility, analysis and implementation stages.

He/she should have 7 years D.P. experience and be able to demonstrate the ability to perform the above tasks.
In return, we offer a friendly working atmosphere in pleasant modern offices off Kensington High Street, excellent training facilities, generous holiday arrangements, flexi-time and an active Sports and Social Club.
For further details, ring Tony Eldred on 01-937 5464 ext. 330.
Application forms quoting Ref. CW/386 from the Personnel Service, The Town Hall, Hornton Street, London W8 7NX. Tel: 01-937 5562 (24 hour answering service). Closing date for applications: 30th August, 1983.
Applications are welcome from suitably qualified disabled persons.

(4990)

BOX NUMBERS

Box number replies should be addressed to:

Box Number .....

c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey, SM2 5AS

International Data Centre and world-wide Telecommunications

Our Client, based in a pleasant environment close by the M1 just north of London, continues to make impressive advances within its field. The Company has a wide range of IBM and other vendor computer equipment processing on-line and batch systems for its operating divisions and subsidiaries across UK and Europe and has telecommunications links to the U.S.A., Africa and Australasia.
A thorough appraisal regarding future strategy has recently been completed resulting in requirements for a number of dedicated computer professionals.
Serious career oriented men and women will want to examine the outstanding opportunities this organisation can offer.
A number of these positions involve international travel.

SYSTEMS SOFTWARE & SUPPORT

Systems Programmer c.£14,000
Senior D.P. Specialist up to £12,000
APL Specialist up to £12,000

Three vacancies are on offer. Firstly there is a requirement for a **Systems Programmer** who has considerable experience of working in an IBM mainframe environment on a range of software which includes MVS/SP, JES3, RACF, ACF/VTAM, IMS DB/DC, Roscoe, and TSO. Quote ref. CW 735

Secondly, they require a **D.P. Specialist** for an interactive support role, who is fully conversant with all areas of IBM software. To advise customers on how best to maximise the efficiency and scope of the system including security, maintenance of software products, planning user requirements etc. Quote ref. CW 734

An essential part of both of these jobs is short-term European travel; therefore a high element of self motivation and personal commitment to achieve company objectives will be required.
Finally, there is a position calling for an **APL Specialist.** This person will support a variety of software and user requirements. Previous bureaux experience would be most appropriate. Quote ref. CW 736

Capacity Planning Specialist up to £14,000

Forecasting user computer demands and utilising modelling techniques to interpret requirements for component upgrades calls for a very specialist skill. The company has recently installed the latest CMF package for capacity planning purposes. Knowledge and experience of IBM hardware and software is essential. The ability to use modelling tools and techniques, inquiry facilities such as APL, SAS and Easytrieve would be desirable.
A high degree of initiative and inventiveness, working without supervision is required. Close liaison with customers in the development of workload forecasts, offering them advice on updates in the rapidly changing DP environment will be very important. This will necessitate European visits. Quote ref. CW 739

Standards Co-ordinator up to £12,000

This is a newly created position. It requires self motivation and the ability to initiate and co-ordinate activities in a multi-disciplined and internationally based operational and technology support environment. Success in the job will be measured by the general acceptance of and adherence by users to the technical standards and procedures put in place by the applicant.
You will be responsible for reviewing the existing technical documentation, standards and procedures and rationalising all documentation into user guides and manuals. Computer technical writing or broad IBM operational experience in mainframes or telecommunications should enable you to co-ordinate the information necessary to formulate standards and procedures and to communicate them to users in clear concise written English. In fact you would be required to act as the focal point for all matters relating to computing and telecommunication standards and procedures. You would also be responsible for assisting with implementation and for auditing compliance with these standards. Knowledge of at least one of the following is essential:

* IBM MVS/SP
* Roscoe or IMS or TSO
* COBOL
* JCL
* Broad IBM operational experience including fault diagnostics, recovery procedures and remedial analysis.

As much of the operational information required for this job resides on APL data bases, a working knowledge of APL is highly desirable. Quote ref. CW 740
All the above call for a good standard of education, although solid experience in the respective fields and good communication skills will be prime requisites.

NETWORK RELATED VACANCIES

Great reliance is placed on international telecommunications systems within the organisation. This comprises a private data network providing batch, interactive and teletype access to mainframe computers, a speech network and message transmission network.
These should be well planned, cost effective with a high availability and meet the business needs of customers.

Network Planning Specialist c.£11,500

The person we seek will assist in the planning, evaluation and control function, to ensure that capacity and topology matches evolving traffic patterns and that the benefits of modern technology are identified and secured. An analytical approach to problem solving and practical familiarity with telecommunications equipment and practices will be essential. Some European travel will be involved. Quote ref. CW 737

Network Engineer c.£10,500

Specifically to install, commission and trouble-shoot a range of equipment including modems, statistical multiplexes and switching modules throughout the UK and Europe. An understanding of data-communications at an operational and technical level is essential. Familiarity with the technology of voice and message systems would be a distinct advantage. Documentation skills and practical experience are sought as client regards both as essential. Quote ref. CW 738

OPERATORS

Personnel are required to further strengthen the highly professional Operations Unit. This installation currently utilises an IBM 3083, 4341 and an AMDAHL V8 running MVS/JES, VTAM, IMS, TSO and ROSCOE with an extensive telecommunications network.

Shift Supervisors c.£8,200 +shift allowance

Shift Supervisors should have IBM MVS Operations experience, at least 2 years in a supervisory role and a thorough working knowledge of JCL, utilities and teleprocessing, together with an effective operating knowledge of interactive systems, especially IMS. Their role will be to ensure integrity of system and user data, handle user enquiries, diagnose, refer or solve system and user problems, monitor and report on hardware and teleprocessing systems, and supervise a team of operations personnel.
Because of shift working, own transport will be necessary. Quote ref. CW743

Senior Console Operator c.£7,000 +shift allowance

For this post IMS on-line (particularly Master-Console) experience is essential. Applicants should have had considerable IBM MVS operations experience, display a mature outlook and have their own transport. Duties will involve working closely with a Shift Supervisor to ensure a high level of availability and responsiveness to the processing needs of our client's user community. Quote ref. CW 742

Network Administrator c.£7,000

Voice and Message Systems Management Services seeks an experienced Co-ordinator. Ideal for someone with experience gained in a large commercial or PTT telephone exchange or communications centre seeking a career in the international communications network field.
Duties will involve co-ordinating administrative activities associated with all network services including test procedures, fault control and traffic analysis costs and records, billings, directories and operating the computer based network real time status system to measure traffic on the voice system. Quote ref. CW 741

The company operates a full training programme. Benefits include free life insurance, BUPA, subsidised restaurant facilities etc. In appropriate circumstances a comprehensive relocation package can be made available.
Act now by sending a comprehensive career resume or telephone for an application form in strict confidence; quoting the appropriate reference number. You may mention companies to which your application should not be forwarded. Ray Diamond,

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You need to have a good education, preferably to degree level, with two years' experience, particularly working in a real-time environment. Ideal candidates will have a combination of the following: GRAPHICS, MINIS AND MICROS, ASSEMBLER or HIGH-LEVEL LANGUAGE.
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For further information and an immediate interview, please telephone Nick Marsh or Karen Whelan on 01-637 9611.

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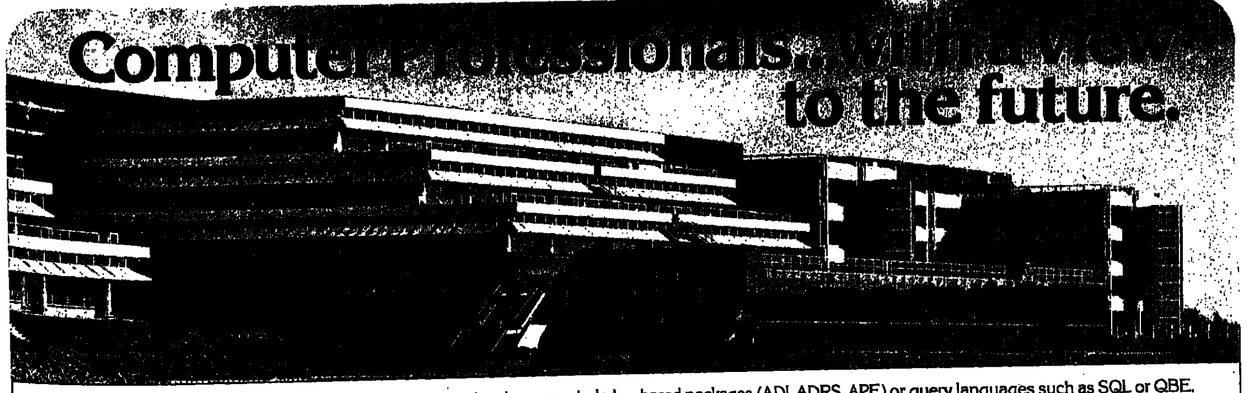

IBM United Kingdom Limited is looking for experienced and career-minded computer professionals to work in its Information and Business Systems Group at the company's headquarters located at North Harbour, Portsmouth.

The Information and Business Systems Group is a service function within IBM United Kingdom Limited which supports a wide range of application systems and end-user services within the company. We are currently engaged in the development of host, distributed and office systems using the latest techniques and are looking for a number of men and women with proven experience to help us meet the business needs of the company. If your background and experience matches one or more of the following then we will be interested to hear from you:

- Two years' programming experience using PL1, IMS, VSAM and TSO/SPF. Experience of IPT would be an advantage.
- Two years' programming experience in a System/34 or System/38 environment using RPG11 or RPGIII.
- Three years' programming experience using PL1, IMS, VSAM and IPT. You should also be capable of dealing directly with a wide variety of end-users at all levels, and have worked on all project phases from gathering requirements through to implementation. Data analysis and IMS DB/DC design experience would be an advantage.
- VM/CMS experience (in either a central site or distributed environment) with practical knowledge of APL or other end-user languages such as the APL based packages (ADI, ADRS, APE) or query languages such as SQL or QBE. Knowledge of PL1 or EXEC2 development in native VM mode would be an added advantage.
- Office automation environment working with products such as PROFS, DISOSS or 8100/DOSF.

We offer competitive salaries supported by a generous range of benefits including BUPA membership, free life assurance and contributory pension scheme. Opportunities to develop your skills within our progressive environment are excellent.

With the South Downs on one side and the coast on the other, the location is first class. As well as the many historical attractions Portsmouth offers a host of outdoor leisure activities.

If you can match our requirements, please write with full details of your career to date, to: B.M.Fairingside, Information and Business Systems, IBM United Kingdom Limited, P.O. Box 41, North Harbour, Portsmouth, Hants PO6 3AU. Please quote reference: CW/5243.

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Our Client is a highly successful International Sales and Marketing Organisation, selling a range of quality products through subsidiary trading Companies throughout Europe.

This Senior position carries responsibility for reviewing the use of computer systems within the subsidiaries, and highlighting priorities in the establishment of an overall European systems strategy.

In addition to involvement in the systems area, other responsibilities will involve liaison between the UK Company and the European subsidiaries on a range of operational issues and problems.

We are sure you will agree that this is a rare opportunity for a young, ambitious Analyst, seeking a career position which is just a little bit special. Of course, the very nature of the position will involve a certain amount of time away from home. We estimate that this would equate to about one month per year, comprising a number of expenses paid business trips of an average 1/2 days duration.

You will find that in addition to offering an extremely interesting and rewarding career path, our Client provides excellent terms and conditions of employment which include company car, bonus scheme and 25 days annual holiday, together with an attractive relocation package where applicable.

If you have broad-based business systems experience, enjoy travelling and meeting people and would like to join a successful and expanding Company, please forward a concise C.V. to **Ian Payne** at the SCR Birmingham office as soon as possible.

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NORTH: International House, 84 Deansgate, Manchester M3 2ER, 061-833 0427

BELGIUM: Avenue Louise 327, Boite 4, 1050 Bruxelles, 010 322-640 7161/71

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Language research and development.

To work for Acornsoft, the software publishing company within the Acorn Computers group.

We are looking for exceptional computer scientists to join our rapidly expanding language research and development team in the areas of systems, artificial intelligence and educational languages.

Research will be carried out on the latest micro-computers and work stations and will involve language design and implementation for current and future generations of micros.

It is essential, therefore, that applicants have experience in a similar field and are able to plan and carry out a variety of different projects.

We offer a first-rate negotiable salary and outstanding career progression opportunities for outstanding programmers. Please write, enclosing a c.v. to: Deborah McGovern, Personnel Manager, Acornsoft Limited, 4A Market Hill, Cambridge.

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You will be based at our Head Office and the projects will include communications networks, terminal controllers and micro processor disc operating systems.

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We are a major computer systems company with significant interests in communications and software. Our commitment to technological excellence has enabled us to earn an international reputation, together with considerable commercial success.

We now seek to recruit an ambitious Project Engineer who will be groomed for a more senior position from the day he joins us.

The successful applicant will be aged 25-40, educated to C&G full Tech/HTEC/HNC Electronics and will possess at least 3 years' experience in computer maintenance. A knowledge of microprocessors would be a distinct advantage, as would software appreciation.

For further information and early interview contact our recruitment consultant Howard Noquet B.Sc. on:

01-637 0781 (8.30 a.m.-7 p.m.)
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Computer Manager

c. £12,000

J. E. Hanger & Co. Ltd., part of the major international health care group InterMed and a member of the BTR Group of Companies, is a light engineering company involved in the manufacture, repair and fitting of artificial limbs and appliances.

The Company runs an ICL System 10/220 machine for accounting and stock control, but requires to expand the applications into production control and several other areas. We are also currently considering updating the present systems thus obtaining larger hardware.

We are looking for an experienced professional to run our computer department and develop the new applications. Familiarity with ICL systems and the ability to program in Assembler and RPGII is essential. The successful applicant, male or female, will also be responsible for a private viewdata system currently being established.

Applications should be made in writing, giving details of past experience and salary to date to: Miss M. B. Kelleher, Personnel Development Manager, J. E. Hanger & Co. Ltd., Roehampton Lane, London, SW15 5PL.

InterMed Hanger

(5009)

COMPUTER OPERATIONS VACANCIES — LEEDS

Leeds Permanent is the UK's fourth largest Building Society with an expanding Management Services Function and a dual IBM 303x installation based in Leeds. The Society has an impressive record of advanced computer system developments including a national on-line system to our branch network. MVS, CICS, SNA, IDMS components and IBM 3380 disks are installed. Plans include IBM 3083 processors and expansion of the telecommunications network to over 1500 terminals.

Additional staff are required to expand the Computer Operations team. The work is challenging and varied and offers the successful applicants the opportunity to work in an advanced computer installation, utilising the latest hardware and software.

Shift Supervisor

The ideal candidate will have a minimum of five years experience of large IBM mainframe operations and will be fully conversant with MVS and CICS. Particular emphasis will be placed on supervisory and communication skills on both a management and technical level. A practical knowledge of JCL and utilities, together with experience of a large network operation is essential.

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Expansion of network services has created a vacancy for a bright, young operations professional to join an experienced team managing the daily operation of its Society terminal network. Candidates will have spent at least two years in an advanced telecommunications environment. Sound knowledge of VTAM/NCP would be most useful.

Benefits

The Society can offer excellent scope for career progression with the opportunity to be involved in the operation of advanced systems. In keeping with these challenging career opportunities, an excellent remuneration package is offered including contributory pension scheme, free life assurance and concessionary mortgage assistance.

Interested applicants should telephone Leeds 438181, Ext. 2373 for an application form and vacancy specification, quoting reference number CW 11/8/83 or write to:

Mr. J. Clark MBIM,
Personnel Manager,
Leeds Permanent
Building Society,
Permanent House,
The Headrow,
Leeds
LS1 1NS.

Enquiries will be treated in the strictest confidence. Envelopes should be marked 'Staff-Confidential'.

the Leeds PERMANENT BUILDING SOCIETY

Interested in Operating Systems Software?

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As one of the world's major minicomputer companies, we are committed to a programme of significant growth during the next 2 years.

We now require two people to join the Software Instruction team at our Customer Training Centre in South Harrow which specialises in the design and presentation of courses for our clients who require teaching in systems and software. Not just a customer service, but a profitable operation in its own right, the centre is fully equipped with the resources to undertake training in-house and on customer sites in the UK and overseas.

The ideal candidates will be of graduate-calibre with 12-18 months' experience in programming and system software, or experience in teaching a relevant subject, who require a new challenge and more job satisfaction.

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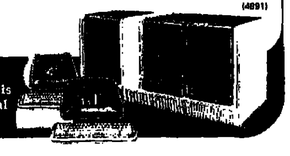

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Data General COMPUTERS

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MANAGEMENT & EXECUTIVE SELECTION

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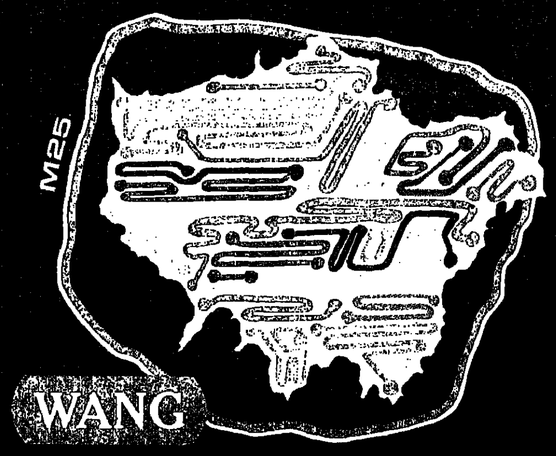

WANG's technical excellence, across a large and varied product range of W.P. Systems, 16 and 32 Bit Computers and Network Communications, backed by high calibre post-sales support personnel has enabled them to achieve consistent unparalleled growth in today's computer industry. (Revenues of circa. $1,500 million this year.)

Currently, they require **Junior and Experienced Customer Engineers for LONDON AND THE SOUTH EAST.** Candidates should have had experience of maintaining any Micro or Mini Computers, W.P. Systems or Computer Peripherals.

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Customer Support

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Senior Systems Support/IBM Comms

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- Programming background
- Customer liaison or support background
- Commercial awareness

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IBM S/34 & S/36

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We require an experienced analyst/programmer to help us in the achievement of these ambitious plans. Though based in Aldershot, he/she will travel to Europe frequently, sometimes at short notice. The ideal applicant will have proven experience in the design, programming and implementation of complex System/34 applications in RPG II. In addition, he/she will have a capacity for hard work; be self-motivating; and diplomatic.

The starting salary for this position is negotiable and will be commensurate to the experience of the successful applicant.

Please write, enclosing c.v., to:
Miss Jan Drake, Molex EML, Church Lane East, Aldershot, Hants GU11 3ST.

(4847)

IBM SYSTEMS PROGRAMMER

NEW IBM 4341 INSTALLATION
WEST SUSSEX **£13K+ pa**

ICI Plant Protection Division is a leading company in the development and international marketing of crop protection products.

The Division makes extensive use of computers, and at our headquarters at Fernhurst we have two large Burroughs computers supporting a network of 150 on-line terminals and two remote job entry computers. At the end of this year, the Burroughs installation is being upgraded and a new IBM 4341/12 is being introduced.

The IBM 4341 will be used for personal computing and new application areas involving the use of advanced software for systems development.

We are looking for an experienced IBM Systems Programmer with good knowledge of MVS and CICS to make up a team of three who will be responsible for the IBM installation.

This is an opportunity to be involved in a new installation and to influence the choice of software in a dynamic environment. If you have at least two years' MVS experience and are looking for a challenging career opportunity, this could be the opening you are looking for.

We offer a competitive salary, contibutory pension scheme, profit sharing, subsidised staff canteen and excellent recreational facilities.

If you are interested please apply to Mr. P. J. Thomas, ICI plc Plant Protection Division, Fernhurst, Haslemere, Surrey GU27 3JE.

ICI Plant Protection Division

(4948)

Senior Engineering Appointments... Pay Television

Racal Oak Limited recently established in the UK as a result of the significant growth of pay television services both in the UK and Europe now wishes to appoint the following key technical staff.

Technical Manager

Responsibility is for the management of all Engineering and Systems activities which will involve significant liaison with Oak technical centres in Holland and California.

Prime areas of activity include the planning and installation of systems – both hardware and associated head end software; support to marketing/sales; control of field service and repair.

Candidates, educated to degree level, must possess a minimum of eight years relevant experience in communication systems – ideally including television.

This appointment will offer the creative and commercially aware man or woman the opportunity to join a Company in its formative period and to play an active role in its future development.

Senior Software Support Engineer

Responsibility here centres on support and installation of systems for pay television. These systems will include both control and business applications software.

The successful candidate will be involved in system design; system modification and customising; on site installation; technical support to sales.

Applicants, educated to degree level, should have gained at least five years experience in a relevant environment ideally involving both interactive business applications and inter-computer communications.

The Company offers highly competitive salaries together with over five weeks annual holiday, pension and life assurance scheme and in the case of the Technical Manager a car. Assistance with relocation expenses will be provided in appropriate cases.

Please write enclosing details of age, experience, and present salary to: Ian Melrose, Personnel Manager, Racal Oak Limited, Richmond Court, 309 Fleet Road, Fleet, Hants.

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HONEYWELL INSTALLATION, COASTAL LOCATION

SALARY TO £10,000 A YEAR

Our client, who is part of a light engineering group, is located near the coast in East Sussex. They are starting to develop the company's sales, manufacturing and accounting systems on a Honeywell DPS6, using a mixture of packages (HDMS and HDFS) and in-house programs.

An experienced analyst/programmer is required to work on this project, initially under the guidance of a consultant but eventually on his or her own. There is therefore a chance for a person with initiative to make a positive contribution to the overall direction of our client's systems, and to develop within the company.

The person selected is likely to have a minimum of four years' experience on Honeywell equipment, using COBOL. Some of this experience should have been on a major project in a manufacturing environment.

Please reply, enclosing a detailed CV and a brief letter explaining why you are the person for whom we are looking, to Shubrook Design Limited at:

Shubrooks

ALMNERS PRIORY (Ref: EO)
ALMNERS ROAD
LYNE, Nr. CHERTSEY
SURREY KT16 0BH
Chertsey (09328) 66812
Llc. No. SE5906

Richard Kaluzynski

I am seeking recruitment consultants to join me in working in the contract programming section of one of the UK's leading computer staff agencies.

Please telephone me on **01-499 2464** or after 7pm at home on **01-840 1169**

All replies will be treated in the strictest confidence.

(5080)

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(5001)

AB EXECUTIVE (KINGSTON) LTD.

TECHNICAL MARKETING CONSULTANTS – CAD/CAM

Suitably qualified people in the areas of Architecture/Construction, Mechanical Design and cartography are required to support the Marketing and Sales department.

Based in Cambridge the successful applicants will be responsible for technical sales support, system demonstrations and technical marketing documentation.

These very important positions attract a good salary and benefits package. A certain amount of travel will be necessary.

Applications in writing to:

Personnel Department
Applied Research of Cambridge Limited
Wellington House, East Road, Cambridge CB1 1BH

(4958)

PERCY THOMAS PARTNERSHIP

require a

PROGRAMMER

to develop software for VAX based graphic/data based system. The *applicant must have knowledge of* VMS operating system, Fortran and a construction industry background will be an advantage.

Apply in first instance to:

Anne James, Percy Thomas Partnership, Central Hall, The Dana, Castle Gates, Shrewsbury SY1 2AD or telephone Shrewsbury 52391

(4979)

COMPUTER OPERATOR

NIGHTS (TEMP)

THOMAS COOK require an experienced Computer Operator to work at our Mayfair Offices operating a DEC PDP 11/70 from 11pm-7am, Monday-Friday inclusive. A good basic salary is offered plus generous shift payment and London allowance. The temporary contract will be reviewed after six months.

Please apply to Mrs S. Dowding, Personnel Department, Thomas Cook, Thorpe Wood, Peterborough, Cambs. Tel: 01-492 7060 Ext. 2939.

(5012)

NATIONAL ASSOCIATION OF CITIZENS ADVICE BUREAUX

The Association currently has the following vacancy:

MICRO-COMPUTER PROJECT MANAGER (3 YEARS)

This Association is currently implementing a Research and Development Project to introduce and appraise the application of micro-computers in a sample of CABx over a three-year period. The aim of the project is to determine whether micro-computers would improve the service offered by the Bureaux to the public, and to identify and develop relevant software together with NACAB support staff and Bureaux.

The Project Manager will be responsible to the Director for the operation and management of the Project, including the management of 11 staff, negotiation with central and local Government, fund raising from a variety of sources including sales of systems, liaison with the computer field, and in particular, liaison within the CAB service.

Applicants must have management and computing skills, together with a sound knowledge of advice and research work. The successful candidate will be based in Central London, but will be required to travel throughout the U.K. A car owner/driver is essential. The post will be offered on a three-year contract.

Salary scale £10,079-£12,618 per annum plus £1250 London Weighting and a 6% non-pensionable supplement. Luncheon vouchers, generous leave, contributory pension scheme.

For job description and application form please WRITE on a postcard to: Head of Personnel, N.A.C.A.B., 110 Drury Lane, London WC2B 5SW.

CLOSING DATE: 31 AUGUST 1983

All applicants considered on basis of suitability for posts regardless of sex, race, marital status or disability.

Citizens Advice Bureaux

(4995)

New Opportunities in Business Systems

Newport

The Plessey Business Systems Department at Newport is expanding to cope with the take-on of inhouse database systems running a VAX 11/780. This expansion is phased over a two year period. Vacancies now exist for the following:

Senior Analyst Programmer (c. £10k) to spearhead the development of financial systems based on digital equipment using COBOL and database reporting techniques.

Applicants should hold a degree or equivalent with approximately five years computing in a financial environment.

Senior Operator (c. £9k) to lead a small shift of Operators. A three shift rota is in operation covering a five day week with some weekend working.

Applicants should have at least three years operating experience, one year of which should be on DEC hardware.

Senior Programmer (c. £9.5k) to control the development of programs on DEC hardware using COBOL as the main language.

Applicants should hold an HND or equivalent and have at least five years business computing experience.

In addition to stated salary, we offer excellent working conditions and big-company benefits.

Please ring or write for an application form to Mrs Marjorie Barnes, Personnel Officer, Plessey Marine Limited, Spytty Road, Newport, Gwent. Tel: Newport (0633) 270110.

PLESSEY
electronic systems

(4972)

IBM Systems Programmers MVS in a Scientific Environment

The Computing Division of the Rutherford Appleton Laboratory runs a large scale computing service supporting several thousand scientific users both at the Laboratory and in universities throughout the UK. There is a mainframe complex consisting of an IBM 3081 and an ICL Atlas 10. These are connected to numerous distributed systems on an X25 network. The main batch operating system is MVT, with a conversion underway to MVS. The mainframe complex also contains an IBM 3032 which is being developed as a central SERC administration system using MVS/CICS.

There are vacancies for two Systems Programmers to help develop and support MVS. Experience of MVS (preferably with JES3) is necessary. CICS experience will be valuable for one of the posts.

Applicants should have a degree or equivalent qualification in a scientific, mathematical or engineering subject.

The posts will be in one of the following grades, depending on qualifications and relevant experience:

Higher Scientific Officer £7,149 – £9,561
Scientific Officer £5,682 – £7,765

Some assistance with the expenses incurred in house sale/purchase may be available.

The Laboratory is a friendly community with its own restaurant and sports facilities nearby.

Benefits include a local transport service, sick leave allowance and generous holidays.

Application forms from: Recruitment Office, Rutherford Appleton Laboratory, Science and Engineering Research Council, Chilton, Didcot, Oxon OX11 0QX. Tel: Abingdon (0235) 445435 quoting Ref: VN 156.

Closing Date: 1st September 1983

serc Rutherford Appleton Laboratory

(4962)

PROGRAMMER/ANALYST WITH MANUFACTURING BIAS

Rapidly expanding, soundly based manufacturing and distribution company with 300 employees seeks a programmer/analyst to further develop software for ICL System 25 and computer services in general.

The successful candidate will be between 25 and 40 years of age with at least 2-3 years experience and a sound educational background. He or she will be capable of working independently and communicating with people at all levels. High standards, particularly in the presentation of documentation, are a prerequisite.

Remuneration will be commensurate with age and experience.

Please apply in writing and in confidence to:

A. K. Brown, FCA
C. Robinson and Company Limited
Tenbury Wells
Worcestershire

(4917)

INTERNATIONAL BANK, LONDON

Programmer/Analyst to: £11,000 + benefits
RPG Programmer to: £9,000 + benefits

Development Opportunities on S/38

Our client, based in NW London only three minutes from the tube, is currently engaged in a major development programme and need two more members for their small, friendly team.

DP facilities are provided by an IBM S/38 Model 7 at the Computer Centre supporting 45 terminals in six branches.

A second S/38 will be delivered shortly for the exclusive use of the Development team. The dynamic environment offers successful candidates every opportunity for career advancement.

Both positions require good RPG skills. Applicants for the senior position will have experience in program specification and file design.

Banking experience is not essential, but applicants with a knowledge of KAPITI will have a distinct advantage.

Benefits include:

★ *Subsidised mortgage*
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Ref B/R2 For further information and Application Form:

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Telephone: (0206) 298181

(4968)

New Opportunities in Information Processing

LONDON

The National Coal Board Pension Funds are embarking on a major project to restructure and extend the computerisation of its investment administration facilities. This is a long-term phased plan involving the use of ICL hardware with IDMS/DDS and associated with a TP network. As a result we now have the following opportunities:

PROJECT LEADER £9,800 – £13,200

Candidates should have experience of leading a small team of programmers in the development of financial applications, and a minimum of five years' experience in the practical use of COBOL, IDMS with DDS. Experience in a real-time environment of TPS would be an advantage. Ref: FY/14A.

PROJECT ANALYSTS £8,500 – £12,000

For one post the successful candidate will be required to undertake a leading role in the support of current and future systems, involving contact with user and software houses. Experience in a similar role would be an advantage, and experience of COBOL systems and program documentation is desirable. Ref: FY/14B.

For the second post the successful candidate will have practical experience in the setting up and control of ICL's Data Dictionary System, preferably in an IDMS environment, and have at least three years' experience of COBOL in financial systems. Ref: FY/14C.

For all positions candidates should have proven practical experience in the development of data based financial systems, ideally in an investment management environment.

Excellent benefits and conditions of service including generous leave. Location will initially be in the City – moving in the near future to the West End.

Please reply with full CV, quoting the appropriate reference number to:–

NCB

Staff Manager (London Offices), National Coal Board, Hobart House, Grosvenor Place, London SW1X 7AE.

Closing date for applications 26th August 1983.

(5013)

IBM OPERATIONS SHIFT MANAGER

SURREY

An excellent career opportunity has been created with our client a major IBM MVS User located in Surrey. Currently this challenging technical environment involves an expansion of database and teleprocessing developments and these need to be supported by a professional computer operations group.

The person appointed will be responsible for the management of a multi-skilled team of operations and support staff. Candidates must therefore be able to offer a strong background of IBM operations, technical and supervisory skills in order to maintain the high standard of computer operations.

to £14,500

+SHIFT PREMIUM AND EXCELLENT BENEFITS

The post will require shift working for which an allowance is payable, and an attractive package of benefits is available including relocation expenses where appropriate.

For further information regarding this position either telephone or write to DP Selection Services quoting reference W8111.

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A member of the DP Support Services Group

7 Swallow Street, London W1R 7HD
"We look forward to hearing from you."

01-434 2042
(24 hour Ansaphone)

(8032)

Network for the future

Real-time Software Engineers
Earnings £11,000 – £16,000 pa

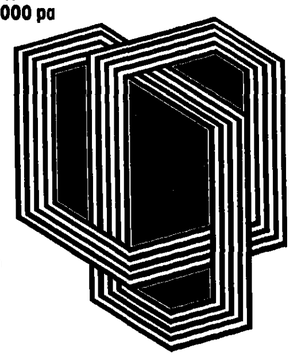
Innovative professionals are invited to join a highly profitable data communications company to develop products sought after world wide.

The company has already recruited a number of high calibre professional engineers as part of its continued expansion policy and now seeks to further develop its project teams. Vacancies exist for Software Design Engineers, Project Leaders and Chief Engineers to be involved with high technology projects from feasibility through to implementation.

Early promotion prospects with high earnings capability are envisaged for the successful individuals at all levels.

Candidates will come from a diversity of disciplines but must have a real time engineering software background coupled with Assembler or high level languages.

Besides providing a dynamic work environment the company offer a competitive benefits package.



For an informal discussion on these and other opportunities within the organisation telephone Miles Richards on 01-938 1804 (24 hours) or 01-847 2385 7pm – 9pm.

IPP Information Processing People
Specialist Recruitment Consultants
20 Kensington Church Street, London W8 4EP
Telephone 01-938 1804 Telex 22861

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DP Recruitment Services Limited part of Duport Plc group of companies provide the most sought-after recruitment services in the computer industry today. The degree of our professionalism to both job seeker and company has resulted in a high profile client base producing the most comprehensive range of computer staff vacancies available. To satisfy our clients requirements we would like to hear from computer professionals from any hardware and software disciplines. Below is an example of the many vacancies we currently have on file. To discuss your next move telephone us on 01-567 5501 until 7 p.m. each day or on Saturday morning, alternatively leave your name and address on our ansaphone or clip the coupon below. 325

SOFTWARE ENGINEERS
£9-16,000
HANTS/BERKS
To meet the manpower needs of recently acquired projects, this large and established software house has a requirement for Software Engineers with a range of experience gained in a realtime, industrial or scientific environment. Knowledge of Assemblers, Fortran, Pascal or Coral is required ideally in a range of mini or microcomputers. 324/1

SYSTEMS ANALYSTS
to £14,000
++ BENEFITS
CITY
A major financial institution is on the threshold of substantial redevelopment of their computerised systems. Vacancies exist for Systems Analysts with a financial or insurance background. Hardware is based on an IBM 4341 and a programming background though not essential would be advantageous. The benefits package includes a generous mortgage subsidy scheme. 324/2

ANALYST PROGRAMMERS
£8-12,000+
HOME COUNTIES
A leading pharmaceuticals company with worldwide established household names have vacancies for Analyst/Programmers with solid Cobol or PL/1 programming skills. The hardware is an IBM 4341 running under DOS/VSE using CICS and DL/1 and experience gained in a similar environment would be highly desirable. Excellent opportunities exist for rapid career development. 324/3

PROGRAMMER/ ANALYSTS
£ negotiable
WEST LONDON
A number of our clients within both industry and commerce are seeking to recruit Programmer/Analysts with solid experience gained in a minicomputer environment. Ideal candidates will have worked on IBM System 34/36, Data General, DEC or Hewlett Packard. Sound programming skills using RPG II/III, Basic+ or Cobol are required. 324/4

MVS SYSTEMS PROGRAMMERS
to £16,000
+ CAR
SERKS/EUROPE
As part of its continued commitments to the needs of the large-scale computer user, our client has a requirement for Systems Programmers to work on major enhancements and extensions to software. Experience of Assembler under MVS is essential and knowledge of TSO, SPF, IES2B, AOF, SNF or HSM would be advantageous. 324/5

SYSTEMS ANALYSTS
£10.5-13,000
LONDON/ HOME COUNTIES
A large UK manufacturing organisation is embarking on substantial DP development meeting requirements for Systems Analysts. Experience should have been gained in an on-line environment and knowledge of manufacturing and production systems would be highly advantageous. Candidates should have the ability to liaise with users at all levels. 324/6

PROGRAMMING TEAM LEADER
EXCELLENT
LONDON
Our client is the UK division of a major American corporation with worldwide manufacturing concerns. A vacancy exists for a Programming Team Leader to control the day-to-day activities of the Programming Department. Essential requirements are a minimum of 3 years programming background on either IBM or UNIVAC mainframes and good communication skills. 324/7

Action.. ring or send the coupon to D.P. Recruitment Services Ltd. Freepost, London W5 2ST 01-567 5501

Name .....
Address .....
Home tel ..... Work tel ..... Ex .....
I am interested in Ref. .....

kba computer systems

Micro-Cobol Programmer

Location: Surrey/Hampshire Border
Salary: c.£10,000 p.a.+ bonus

Our client, Keith Brindle Associates Ltd., is a software house that specialises in the development of systems for motor dealers. Their current base of clients is impressive and they now wish to recruit a Micro-Cobol Programmer to help service and develop an important new product.

- ★ If you have around 4 years' experience as a Programmer
- ★ If a significant part of that experience is using Micro-Cobol
- ★ If you are looking for a different career opportunity
- ★ If you can communicate with others, both in technical and business terms

... then you are probably the kind of person our client would like to meet

A growing company, Keith Brindle Associates is a small, enthusiastic team, and you will be given the opportunity to make a major contribution to their progress.

Please telephone, or send a short personal history to A&A Consultants (Holding) Ltd., County House, 10 Little Portland Street, London W1N 5DF. Tel: 01-631 4184. Please quote Ref. No: 93.

A&A

(4610)

Recruitment Consultants

Established in 1960, Industrial Artists Limited is one of Europe's leading service organisations supplying highly-skilled professional staff to UK and Overseas clients.

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If you are equally at ease with clients or applicants, aged 25+, highly motivated, in possession of good communication skills and above average common sense, we can offer you an excellent renumeration package in a challenging and demanding environment.

For an initial discussion please telephone:

Ann Arlidge, Marketing and Recruitment Director, on (0462) 57141 (days) or (0462) 700701 (evenings).

Marketing & Recruitment Division
Industrial Artists Limited
21 Bancroft, Hitchin
Hertfordshire SG5 1JP Telex: 825146

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to cover the US-Army installations in Germany.

Qualifications/requirements are:

- Sales experience (in the Military Field preferred)
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- Analytical skills (Project Management)
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- English as mother tongue (preferred)

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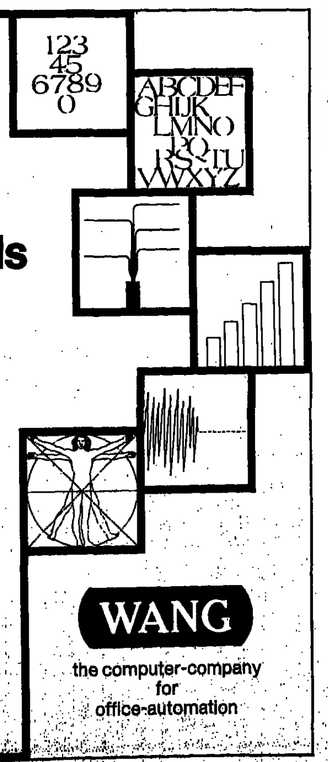
WANG Deutschland GmbH
Personnel Department
Lyoner Straße 26
6000 Frankfurt am Main 71
West-Germany



WANG

the computer-company for office-automation

MSA
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Here is your opportunity to join MSA Limited, the world's leading supplier of packaged applications software. You will almost certainly know of MSA by reputation. Their products are second to none; their sales and support staff are amongst the best in the business.

Continuing success and expansion have led to a recent move to larger and even more prestigious offices in Maidenhead, and have created the need for one more Sales Executive with responsibility for selling the whole range of financial/commercial packages – GENERAL LEDGER, ACCOUNTS RECEIVABLE, ACCOUNTS PAYABLE, PURCHASE ORDER CONTROL, INVENTORY AND PURCHASING, FORECASTING AND MODELLING, FIXED ASSETS ACCOUNTING.

The position is based in Maidenhead.

Quite simply, you must have a first-class track record in sales, gained in the relevant application areas, probably in a bureau or timesharing environment.

Your ability to negotiate at the highest levels and your disciplined and professional approach to selling will have ensured that you are already successful and enjoying high earnings. We suggest that you build on that success by joining a company whose reputation and growth are exceptional and whose plans for the future will ensure the best possible career prospects for high fliers.
It's likely that, because of the qualities we seek, you will be in the age range 28-42.

* WE BELIEVE THAT THE EARNINGS PACKAGE AVAILABLE IS THE BEST CURRENTLY AVAILABLE IN THE COMPUTER SERVICES MARKETPLACE.

Please contact MARK IRENS for further information on these top sales positions. CW1108/1

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LONDON SW1E 5HW.

TELEPHONE: 01-630 0434 (24 HOURS)

(5021)

Hutton
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Computer Aided Design

Balfour Beatty Engineering provides consultancy and project management services in civil engineering, electrical engineering and all types of industrial processes. With a main Design Office at Sidcup, our operations are international.
The computing equipment in use is the PDP 11 series with RSX 11M operating system using Fortran plus Macro 11 languages.

Systems Engineer

To strengthen our CAD team we now require a Systems Engineer to work on system configuration and software design which will include our Computer Aided Design package and comprehensive database and reporting functions. He/she will supervise the day-to-day operation of the hardware.

Programmer

We also require a Programmer to produce and test the software for CAD and engineering computations. Day-to-day operation of the hardware will be involved.
The people we require must have experience in this work and must be familiar with the computing equipment and languages used. Knowledge of other languages and operating systems would be helpful.

Both posts are based at Sidcup. Competitive salaries are offered with relocation expenses if required. The company has a staff luncheon club and a sports and social club. Working hours are flexible.

Find out more. Send your c.v. to Jack White, Personnel Manager, Balfour Beatty Engineering Limited, Marlowe House, Station Road, Sidcup, Kent DA15 7AU. Tel: 01-300 3355. Please quote Ref. 524.

(5003)

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Digital is the world's no. 1 minicomputer manufacturer, with an advanced range of best-selling systems and a number of major new product launches in the pipeline. We are obviously looking forward to a very successful future and in line with our continued growth, we are now looking to strengthen the team in our Field Service Data Centre based at our UK Head Office in Reading, where we are about to add a new VAX 11/780 to our existing PDP 11/70S. To be more specific, we need the following people:

We are looking for someone who is perhaps currently working in a similar position or has an in-depth knowledge of computer operations in a similar environment. What is essential, however, is that you have a thorough understanding of running VAX or PDP systems under VMS or RSTS/E, together with well-rounded user liaison skills and the ability to work effectively with the minimum of supervision. Programming in Basic + 2 would be an added advantage. REA/7C3/565.

Systems Support Analyst

Reporting to the Data Centre Manager, you'll join the Field Service Operations Group at this modern facility. Within this team, you'll be responsible for the implementation, maintenance and technical support of software for distributed systems at our field service branches throughout the UK and Ireland, as well as the support of systems run at the Centre. The role will obviously necessitate liaison with Branch personnel for which some travel will be necessary.

Computer Operator

Reporting to the Operations Supervisor, you'll work closely with the Senior Operator in the day-to-day running of the Centre's systems and applications. With the impending arrival of a new VAX 11/780, you can expect to be involved in helping to run this impressive system.

To match our expectations, you should be a competent operator with at least 12 months' experience of running VAX or PDP systems under VMS or RSTS/E. REA/7C3/563.

For both of the above positions, the rewards of joining Digital are excellent. We offer attractive salaries backed by a full range of valuable benefits including pension and life assurance schemes, sports and social club as well as a subsidised staff restaurant. And for the ambitious, the prospects for rapid career development within our successful and expanding organisation are excellent.

If you'd like to work with Digital, write giving brief career details to: Stewart Townsend, Data Centre Manager, Digital Equipment Co. Limited, Digital Park, Reading, Berks. Tel: Reading (0734) 868711 ext. 3870.

digital

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IBM OS CICS JCL COBOL PROGRAMMERS
IBM PL1 DL1 VM/CMS PROGRAMMERS
IBM PL1 IMS DB/DC PROGRAMMERS
IBM IMS DB/DC COBOL PROGRAMMERS
IBM CICS DL1 COBOL PROGRAMMERS
LIFE ASSURANCE SYSTEMS ANALYSTS
VM/CMS SYSTEMS PROGRAMMERS – URGENT
CICS MANTIS PROGRAMMER
IBM DOS TO MVS ASSEMBLER PROGRAMMERS – PARIS

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VMS/DBMS CONSULTANT – VERY URGENT

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ICL 2900 FORTRAN SENIOR PROGRAMMER – URGENT
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ICL 2900 IDMS DATABASE DESIGNERS
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ICL 2900 VME BASE SUPPORT PROGRAMMERS
ICL 1900 VME/DME COBOL ANALYST/PROGRAMMERS
ME29 TME/TP COBOL ANALYST/PROGRAMMERS
DRS CICS COBOL ANALYST/PROGRAMMERS
DRS CICS COBOL DESIGNERS
ICL SYSTEM 10 & 25 PROGRAMMERS – UK & FLORIDA, USA – URGENT

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REALTIME EXPERIENCE IN ENGINEERING ENVIRONMENT – CORAL, ALGOL OR PASCAL EXPERIENCE DESIRABLE
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Manufacturing company developing new interactive systems on IBM 4341 mainframe require a project leader aged 28-35 years with minimum 5 years experience of analysis and programming. Manufacturing systems knowledge is essential; IBM experience an advantage. Excellent location and benefits. Re-location assistance. Ref. 816

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North Wilts — c. £10K

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Project Leader
North Wilts — £11K+

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We currently have 6 software houses in the Central London/City area seeking your RPG III expertise. If you are bright and a good communicator, then 12 months+ experience will be considered. There are also more senior roles available for Analyst/Programmers with design and implementation experience. Most of your work will be London based. **REF. C/4813**

ANALYST/PROGRAMMER LONDON To £11,000

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IBM OPPORTUNITIES

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PROGRAMMERS BERKS & MIDDLESEX
To £9,500

There are many new positions now available in Berkshire, West London and Middlesex for ambitious programmers wishing to increase their skills. My clients require 18 months+ IBM COBOL under MVS or DOS/VSE in a commercial environment. You will be working in a development capacity, utilising CICS, DL/I or IDMS database in the retail, manufacturing or transport industry. **REF. C/2440/6**

OTHERS

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Neg.

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ICL ME29 CITY
To £10,500

This is an excellent opportunity for a Programmer to take up a key position within this well established insurance company. The company house 2×ICL ME29 running under TME. Applicants should have a minimum of 18 months' ICL COBOL experience, with extensive exposure to TPS. You will play an integral part in user training, coding, design and implementation of a range of insurance and business systems. This is a new position offering career prospects, in-house education, exciting development projects, and a pleasant and flexible working environment. Excellent package including subsidised lunches and 4 weeks' holiday. **REF. D/2452**

MAJOR ICL DEVELOPMENTS SURREY
£9,500+Mort

This Surrey-based insurance concern currently in the process of developing new systems are offering interesting work to Programmers and Analyst/Programmers who can offer 18 months+ ICL COBOL experience. Experience of VME would be desirable and will be rewarded accordingly. Full training is offered in database techniques, TP systems, and aspects of systems design. This is an excellent opportunity to gain varied and practical experience while pursuing a worthwhile career. Company benefits include 4 weeks' holiday, subsidised restaurant and pension scheme. **REF. D/1739**

RETRAIN — ANY COBOL
c.£10,500

My Essex-based client is seeking a mainframe COBOL Analyst/Programmer with in excess of 3 years' on-line and database expertise. You will be given extensive training in the latest Honeywell kit and techniques. As a Senior Analyst/Programmer here you will immediately be involved in challenging database development projects including completing systems design work. The systems are of both a commercial and financial nature. Benefits include 5 weeks' holiday, subsidised restaurant, company car, non-contributory pension scheme and social club. **REF. A/1712**

DEC/PDP — BASIC+
c.£10,000 — Relocation

This Surrey-based organisation, is seeking an Analyst/Programmer within excess of 2 years' DEC BASIC+ experience hopefully but not essentially with RSTS/E. They offer the chance for you to become involved in commercial development projects whilst furthering our skills, with an extensive training program. The department is divided into small teams thus giving outstanding and permanent career prospects. The company offer a non-contributory pension scheme, flexi-time and a full relocation package (where appropriate). **REF. A/2417**

HEWLETT PACKARD — COBOL
c£9,000

Based in Berkshire, this company have recently taken delivery of a new HP3000 using IMAGE, VIEW, QUERY and COBOL. Consequently they require an Analyst/Programmer with 12 months+ relevant experience on HP kit. You will be given responsibility for user liaison, writing specifications and completing programming and implementation duties. Applications range from accounting to commercial. This is an excellent opportunity for you to become involved on the ground floor of an expanding department. Company benefits are good and include a substantial bonus scheme. **REF. A/3104**

(6007)

ENGLEDOWN

COMPUTER PERSONNEL CONSULTANTS

Brushfield House, 12 Brushfield Street
Bishopsgate, London E1 6AN
Telephone: 01-247 3356 (24 Hours)

Creative Communications

in a world of opportunity
c. £10,000 — £17,000 pa

OPENINGS FOR SENIOR ENGINEERS/TEAM LEADERS SOUTH EAST

A British company, about to announce record profits, is established at the forefront of communications technology . . .

It now wishes to recruit real-time software engineers to work on every aspect of a new generation of voice and data systems. Total project involvement encompasses systems design and development, adaptation and integration through to final implementation. You will be give every opportunity to utilise your software skills within small project teams.

Product training and initiation into the company's design methodologies will enable you to quickly establish yourself as a key team member.

Alternatively if you have had experience of training and motivating staff there are openings at the level of team leader. These will involve the formulation and implementation of project policy which may necessitate some overseas travel.

IPP Information Processing People

Specialist Recruitment Consultants
20 Kensington Church Street, London W8 4EP
Telephone 01-938 1804 Telex 22861

If you have experience of any high level languages on any hardware telephone Marc Zundel on 01-938 1804 (or 01-602 0885 between 7.30pm and 8.30pm) to discuss these opportunities in greater detail. Alternatively write to us (quoting ref: MZ) with full career details.
All applications will be treated in strictest confidence.

(4965)

IBM

PROGRAMMERS HERTS c.£9K

Our client, a household name in manufacturing, running a small DP department are seeking commercial Programmers. Candidates must have minimum 18 months' COBOL in an IBM environment. Experience of CICS or VM/CMS useful.

ANALYST MIDDX c.£10,500

This financial organisation involved in consumer lending is developing Systems on IBM 4341 under DOS/VSE, VM with CICS using COBOL. They have established a requirement for an Analyst with programming background to join the team working on on-line systems.

SENIOR PROGRAMMER MIDDX £12-£14K

A multinational manufacturing company running IBM 370 under MVS with IMS CICS and TSO/SPF etc. is seeking a candidate to lead, motivate and train a team of Programmers. Applicants should have four years' experience on IBM MAINFRAMES including on-line COBOL and preferably some DATABASE.

COBOL PROGRAMMER MIDDX £9-£10K

This prestigious International Company in development of on-line Warehousing/Distribution and related systems on IBM 4341 under MVS soon to install IDMS. They are seeking a candidate with about two years' COBOL preferably on IBM mainframes to join a small team.

SYSTEM 34/38

PROGRAMMER HERTS to £10,000

Our client, a multinational manufacturer of components running 34's moving towards System 38. They are currently involved in MAAPICS both U.K. and Europe and heavily into communications. They require someone with at least two years' RPG II preferably with a manufacturing background, exposure to MAAPICS would be advantageous.

RPG III ANALYST/ PROGRAMMER MIDDX £10-£14K

The services division of a successful company also operates as a software house in the System 38 market they are seeking an applicant with at least three years' DP experience including RPG III. Applicants should be able to successfully liase with clients and take systems from feasibility to implementation.

RPG III PROGRAMMERS MIDDX £8-£11K

A small friendly DP department in a rapidly expanding insurance company has recently installed System 38 they need Programmers with good knowledge of RPG III to join the development team. Long-term prospects are good due to planned expansion. A mortgage subsidy is available.

ANALYST/ PROGRAMMERS BEDS to £10K

A leading service company enjoying rapid growth in an expanding market in the U.K. Currently utilizing 34's soon to be upgraded to 36. Candidates must have a minimum 18 months' to two years' RPG II in a 34 or System 3 environment. Systems include development of financial applications.

HP

ANALYST/ PROGRAMMERS MIDDX c.£10K

A software house specialising in HP 260 and 3000 systems is seeking Analyst Programmers with experience of Business BASIC or COBOL. The company is involved in Bespoke Software and its own packages covering accounts, production, planning and inventory control.

SENIOR PROGRAMMER and ANALYST BUCKS c.£11K

Leading manufacturer of high technology products to industry and the medical market. They are seeking a number of people at different levels in particular Programming and Systems people. Senior Programmers will have minimum of three years' COBOL with exposure to HP and supervisory experience. The Analyst must have 18 months to two years' analysis. Experience of HP is an advantage.

PROGRAMMERS ANALYST/ PROGRAMMERS BEDS to £12K

A fairly new installation are currently seeking to build their DP department currently using a HP3000 on site with a remote site and terminals. Candidates must have two to three years' COBOL of which at least 12-18 months on HP Hardware in a commercial environment.

For further information contact Nick Lewis (Middx positions) or Chris Chehade (other positions)
HOWLETT COMPUTER SERVICES
FREEPOST
Leighton Buzzard, Beds LU7 7BR
Telephone 0525 382555 (3 lines) or 029 672 221 (evenings/weekends)

(5022)

HOWLETT COMPUTER SERVICES

PROGRAMMERS/ ANALYST PROGRAMMERS

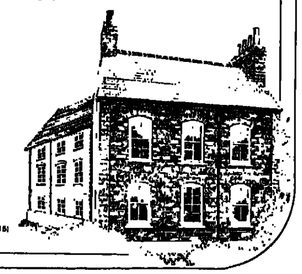
System 38 - Middlesex
to £13,000 + Benefits

Planned expansion into new business areas has meant a 100% increase in turnover for the U.K. subsidiary of a well-known American insurance group. This continuing growth has necessitated the upgrade from twin System 34s to a System 38. To help bring the software into line with the new hardware they now need to recruit three experienced System 38 professionals.

The senior position calls for an Analyst/Programmer with good technical and communications skills gained within the G.S.D. environment. Previous supervisory experience and some knowledge of financial systems would be an advantage. Programmers should have two years' experience and be looking to develop in a project environment. In both cases candidates must have at least one year's exposure to RPG III on the System 38 and be capable of supporting a widespread user group.

Salary is negotiable according to age and experience and is accompanied by the sort of benefits package normally associated with an international group. The real benefit, however, will be the opportunity to grow with a rapidly expanding company.

Call David Mason Johns today on 01-948 5922 (24-hour answering service) on 01-747 0969 (evenings or weekends) for an application form. Alternatively write to him at the address below.
Please quote Ref. 8166/CW.



KPG
01-948 5922
KPG Computer Support Services Limited
Cobden House, Park Lane,
Richmond, Surrey, TW9 2RA

MANCHESTER INTERNATIONAL AIRPORT AUTHORITY HAS ESTABLISHED A NEW POST

SYSTEMS ENGINEER

Who will be responsible for the planning and control, the development, installation and on-going maintenance and performance of computerised systems, the proposal and justification for the introduction of further computerised facilities.

Applicants must have several years' real-time experience of mini and micro computers, be familiar with technical processing and experience of high level languages is essential.

The salary and conditions of this post will be in accordance with P.O. Grade 1/21.E. £9,946 to £11,703 per annum, dependent on experience.

Further details and application form are available from the Head of Personnel Services, Room 728, Control Tower Building, Manchester Airport M22 5PA, telephone 061-489 3714.

Completed applications must be returned by Friday, 19th August, 1983. (4804)

★ TRAIN IN USA ★
CUSTOMER ENGINEERING

Leading multinational manufacturer, secure and fastgrowing, seeks keen young Engineers to train on special systems and advanced techniques. Sound electronic background essential – disk experience a bonus. Excellent training (US/Europe/UK). Benefits include realistic salaries (£9½-8½K+car, o/t, etc.), friendly management ensures career enhancement, regular reviews, etc. Opportunities NOW in London, Home Counties, Midlands and North-West. **OTHER OPPORTUNITIES:** Engineers with exp. of DEC/DG/P-Elmer/lookalikes, etc, for London/Home Counties; and Data Comms exp. for E Anglia.

Whatever your requirement – expand your career NOW – RING MIKE HILL ON 01-549 8441 (Office) or 01-394 2359 (outside office hours and weekends, etc).

db executive (kingston) ltd

PERMANENT OPPORTUNITIES IN THE USA

IBM COBOL or PL/1

A major software group is looking for banking/financial experts to work with international clients. Full relocation and excellent salary.

Ring David Mason Johns now or send c.v.

KPG
01-948 5922
KPG Computer Support Services Limited
Cobden House, Park Lane
Richmond, Surrey TW9 2RA
(5028)

NEWCASTLE UPON TYNE POLYTECHNIC
Computer Unit

SENIOR SYSTEMS PROGRAMMER (PO1 (4-8))
Ref No APC 28/83

required to be responsible for a number of computer systems supporting 150 terminals. Candidates would be expected to have a minimum of two years' systems programming experience. Experience of computer networking would be an advantage.

SENIOR PROGRAMMER/ ANALYST (SO1/2)
Ref No APC 29/83

Required to assist in the planning, design and management of computer projects. Candidates would be expected to have a minimum of two years' programming experience. Preference will be given to candidates with experience of systems programming, networking or graphics.

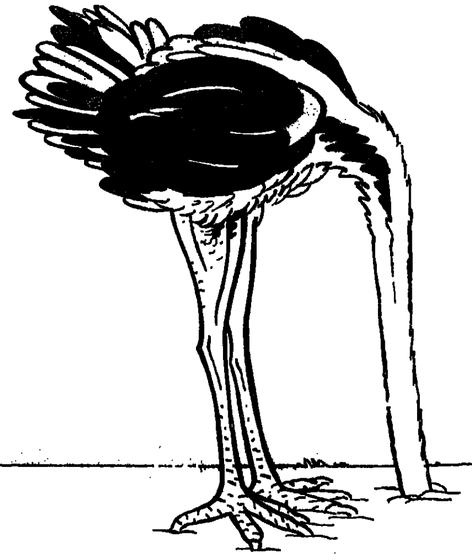
Candidates for both posts will be assessed on a combination of academic and professional qualifications together with relevant experience.

NJC Salary and Conditions of Service:
PO1 (4-8): £10,761-£12,087 per annum.
SO1/2: £8,080-£10,539 per annum.

For further details and application forms please call our 24 hour telephone answering service (0632 322128) or write enclosing a stamped addressed foolscap envelope to Mrs Rosemary Smith, Administrative Assistant (Recruitment), Newcastle upon Tyne Polytechnic, Ellison Building, Ellison Place, Newcastle upon Tyne NE1 8ST, to whom completed forms should be returned quoting the reference number by 26th August 1983. (4833)

RPG II Programmers

ISN'T IT TIME YOU GOT AHEAD?



c £8,000 — £10,000 pa Rural Home Counties

On-line Development

If you have at least 18 months RPG experience on any hardware this could be your opportunity to join a busy and successful programming team.

Following the purchase of a powerful new WANG VS100 programmers enjoy involvement in the analysis, design and programming of a wide variety of on-line and batch systems. Additionally the DP department is extending its existing telecommunications network and utilising a variety of other new technologies to improve customer service/information systems.

The company is in an exceptionally strong financial position and is totally committed to rewarding staff for their efforts and successes. Regular merit reviews are complimented by a bi-annual bonus scheme and annual cost of living salary review.

If you are looking to further your career in a challenging environment which will generously reward you for your efforts **telephone Marc Zundel on 01-938 1804 (or 01-602 0685 between 7.30pm and 8.30pm) or write to us with full career details.**

All applications will be treated in strictest confidence.

IPP Information Processing People
20 Kensington Church Street, London W8 4EP
Telephone 01-938 1804 Telex 22861

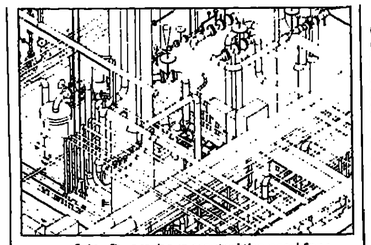
A NEW COMPANY WITH 15 YEARS OF ACHIEVEMENT

FORTRAN ANALYST/PROGRAMMERS TO £12,000 pa CAMBRIDGE

CADCentre Limited is an exciting new company which has evolved from one of the most respected CAD/CAM development organisations in the country.

With Government support, the Company has been restructured and, backed by three major British Companies, CADCentre Limited is poised to attack the CAD/CAM market from the secure base of on-going contracts. Their engineering design and graphics products already lead the field.

Existing commitments to refine and extend these products, and also to develop further equally successful software, have created the need for a number of skilled **Analyst Programmers.**



The successful applicants will have either a **Degree** or HND in an **Engineering, Computer Science** or **Mathematics** discipline together with the ability to produce accurate results quickly in **FORTRAN.** However we are not seeking just Programmers, we need **problem solvers** with the ability to **communicate** with users, **identify** the requirement and then **"stick with it"** until the solution is found. Although a team structure exists a high level of flexibility and self motivation are sought after assets.

CADCentre Limited

The modern offices are set in a rural location on the outskirts of Cambridge. The University City has excellent shopping, sports and cultural facilities with housing at reasonable prices both in the City and the surrounding villages. Communications are excellent with easy access to the East Coast, The Midlands and London.

Salaries of up to £12,000 pa, flexible working hours and relocation assistance (where appropriate) will make moving to Cambridge easy and enable you to enjoy the lifestyle that CADCentre, the City and the countryside can offer.

So if you want to develop your career in a dynamic new company with a secure future in the growing market of **CAD/CAM,** telephone or return the coupon below and we will send you an Application Form and full Company Profile.

Please send an Application Form and Company Profile to:
0483
Surname
First names
Full address
Home tel
Work tel Ext

RJB MANPOWER SERVICES LTD.
FREEPOST 24, London W1E 5JZ.
Telephone :01-439 8591 (24 hour answerphone)

COBOL PROGRAMMERS & ANALYST/PROGRAMMERS

CENTRAL LONDON **£7,500-£11,000**

Several outstanding opportunities exist within this rapidly expanding international organisation with a £multimillion turnover.
The data processing department houses up-to-the-minute mini computer technology with a wide variety of modern periphery equipment. In order to meet growing demands our client is seeking to recruit both Programmers and Analyst/Programmers to progress their career in a fast moving, real-time environment.
If you can offer 18 months' COBOL expertise and want to find out more about these exciting positions contact DP Selection Services quoting ref A1.

COMMERCIAL SYSTEMS DEVELOPMENT

SYSTEMS ANALYSTS **SALARY £11,000-£14,000**

Our client, a major UK Company based in LONDON, is seeking to recruit experienced Systems Analysts to work on their IBM mainframe.
Ideally candidates will be able to demonstrate experience of systems analysis from feasibility through to implementation in a commercial environment. Some knowledge of interactive and/or database systems would be advantageous although not essential.
The opportunity to work on new development projects in a dynamic environment is combined with excellent career potential and salary package.
Contact DP Selection Services quoting ref A2.

JUNIOR PROGRAMMERS – AN OPPORTUNITY TO MOVE TO IBM

ESSEX **c£8,000**

Can you offer at least one years' COBOL or RPG programming experience on any mainframe? Our client is seeking to recruit a number of Programmers keen to progress their career in an IBM environment using IBM 4341 DOS/VSE for their installation based in Essex. An excellent range of company benefits are also available. Please write or telephone quoting ref A3.

COBOL PROGRAMMERS & ANALYST/PROGRAMMERS

ESSEX **£9,000-£11,000**

Our client's systems development team is constantly expanding in order to meet project demands from a variety of systems in an interactive database environment. Working upon very powerful minis linked to a mainframe, candidates should possess a minimum of two years' mainframe COBOL or RPGII.
You will be given the opportunity to join a friendly team and liaise with the Users in this established and rapidly expanding company. Please write or telephone quoting ref A4.

PL/1 DEVELOPMENTS ANALYST/PROGRAMMERS & PROGRAMMERS

CENTRAL & WEST LONDON **£9-£13,000**

New PL/1 based projects are in the early stages of development at our client's sites in Central and West London. These projects include the use of CICS and DATABASE software and education and training will be provided on these techniques where necessary.
PROGRAMMERS will be able to offer around two years' experience and will be keen to progress towards analysis. ANALYST/PROGRAMMERS will have had some exposure to design and specification work and will enjoy working closely with Users.
To learn more about these developments telephone or write now quoting ref A5.

IMS PROJECTS – SOUTH COAST

ANALYSTS AND SENIOR PROGRAMMERS **£9-£12,000**

Our client is currently in the early phases of development of major new IMS based systems. New project requirements have lead to an increase in staff requirements for ANALYSTS and SENIOR PROGRAMMERS. ANALYSTS will need to offer sound commercial experience including some database and on-line systems.
SENIOR PROGRAMMERS will need to offer sound IBM COBOL together with some database knowledge and can look forward to specifying and developing new IMS batch and real-time programs.
Telephone or write now for further information quoting ref A6.

These are just some of the career opportunities that we are currently assisting our clients to fill. We would be pleased to talk to you regarding these and many other vacancies that we are currently aware of. Telephone one of our consultants to discuss your particular requirement and how DP Selection can help you.

dp SELECTION SERVICES
A member of the DP Support Services Group

7 Swallow Street, London W1R 7HD
"We look forward to hearing from you."

01-434 2042
(24 hour Ansaphone)

4830

PUBLIC SECTOR APPOINTMENTS

Systems Manager

Salary £13K to £14K

The Agency is seeking a person to head a small group that will assume responsibility for the management of its computer operations, including liaison with various user departments and the design and development of future systems.

The Agency has a range of functions including financial investment and monitoring, construction, marketing, and management of factories including design and the provision of numerous advisory services; overlying all the financial controls necessary within a business of some £80 m. turnover.

The successful candidate will be able to demonstrate a good appreciation of business practice and the ability to manage the computer operations of the Agency. Applicants should have considerable experience of:

i) *ON LINE operations*
ii) multi-user, mini computer systems work
iii) enquiry systems
iv) programming experience

It would be an advantage to have knowledge of integrated systems operating in the Public Services sector.

Salary will be within the range quoted with six weeks annual holiday *in addition to public holidays. There is a* contributory pension scheme and a car user allowance.

Assistance with relocation expenses will be given where appropriate. Applications for this post are invited by 31 August 1983 (closing date). Please write in confidence giving career and personal details, or telephone for an application form quoting reference PD/83/14.

WDA

Welsh Development Agency

Terry Thomas, Personnel Department
Welsh Development Agency
Treforest Industrial Estate, Pontypridd
Mid Glamorgan, CF44 5UT.
Telephone (044 385) 3571.

(5019)

UMIST

ANALYST PROGRAMMER

Applications are invited from suitably qualified Analysts or Programmers for a permanent appointment in serving the administration of the Institute.

It is likely that the successful candidate will either be a Systems Analyst with recent experience of programming or a Programmer interested in developing his/her career in systems analysis.

The Institute operates an ICL 2904 with tape, discs and on-line terminals. The main programming language is COBOL while extensive use is made of FILETAB.

The appointment will be made on the SAO IA grade on a salary scale £6,310-£11,615 with placing according to age and experience. *Membership of the USS* pension scheme is a condition of appointment.

Requests for application forms and further particulars, quoting reference B/117/BC, should be sent to The Registrar, Room B9, UMIST, PO Box 88, Manchester *M60 1QD. The closing date is 26* August 1983.

(4999)

Computer Auditor

based in Reading
£11,184-£12,408

A computer audit specialist is required to join a small team within the *Internal Audit* Section. The Authority uses a Region-wide network of PRIME computers and is currently developing a major ICL 2966/2988 configuration which will support a large teleprocessing network. Audit activities range across all aspects of computing, including the examination of systems during and after development, audits of computer centres, technical audits of system software and the development of audit software.

Candidates will be expected to be *experienced computer analysts/programmers* or accountants with a sound practical knowledge of computing. An understanding of the role of Internal Audit, together with the ability to criticise constructively and communicate effectively are considered essential. The post involves some travelling within the Region and applicants should hold a current driving licence.

Benefits include a superannuation scheme, generous holidays, flexible working hours, staff canteen, good social and sporting facilities.

Applications, giving full details of qualifications and experience, together with the names of two referees, should be submitted to the Regional Manager (Manpower), Nugent House, Vastern Road, Reading RG1 8DB by Friday 26th August 1983, or phone Derek Dunn on Reading (0734) 593337 for an informal talk.

Thames Water

(4978)

Islington
Finance

COMPUTER SYSTEMS DEVELOPMENT MANAGER

PO6 £15,168 to £16,491 inclusive

A unique opportunity arises to manage an ambitious development programme following promotion of the existing post holder.

Islington has a strong computer development schedule with a major thrust towards database systems and a firm commitment to be out of 1900 emulation by April 1985.

The Council has just approved the purchase of 2 × ICL 2988s of 16 megabytes and 1 × ICL 2955 of 3 megabytes plus an extensive network of DRS terminals and work stations.

Ambitious and resilient candidates who must have had at least four years' experience in the middle management of a large D.P. department and be able to demonstrate a successful track record in systems development and implementation can obtain an application form from Director of Finance (Admin. Section), Town Hall, Upper Street, London N1 2UD (Tel. 01-226 1234, ext. 315 or 449). Please quote reference: FC.141. Closing date: September 2, 1983.

Our jobs are open to all races and both sexes and we have a positive attitude towards employing disabled persons.

(5017)

POLYTECHNIC OF THE SOUTH BANK
Borough Road, London SE1 0AA

MANAGER INFORMATION TECHNOLOGY CENTRE

Salary up to £14,000 p.a.

The *POLYTECHNIC OF THE SOUTH BANK in association* with the BOROUGH OF WANDSWORTH is proposing to sponsor, subject to the formal approval of the MSC (under the YTS Scheme), an **Information Technology Centre at Manor House, Clapham Common.** The Centre will provide work experience and training for young people in micro processor and computer applications.

We are seeking a person with appropriate management experience and with knowledge of relevant production and marketing techniques to manage the Centre. The initial appointment would be for a period of 15 months with the possibility of further extension.

Application forms and further particulars are available from *the Staffing Office, Tel: 01-928 8989 ext. 2355.*

Application forms should be returned by 31st August 1983 and it is expected that preliminary interviews will be held in mid-September to suit the convenience of applicants.

(4982)

UWIST

University of Wales
Civil Engineering and Building Technology

RESEARCH ASSOCIATE

(Computer Programmer)
(Fixed term – 2 years)

Duties will include programming on a range of research and teaching projects. Prior experience in civil engineering NOT required.

Salary: Within Range 1A Research and Analogous Staff £7,190-£11,615 per annum

Requests (quoting ref A43) for details and application form to: Staffing Office, UWIST, PO Box 68 Cardiff CF1 3XA

Closing date:
Friday, 2 September 1983

(4971)

UNIVERSITY OF TROMSØ

PART-TIME PROFESSORSHIP IN COMPUTER SCIENCE

The professorship (part-time) is vacant for a period of 3 years. The salary is N. kr. 45 335 p.a.

Further particulars concerning the professorship may be obtained by writing to the university or from Professor Knut Skog, telephone Tromsø 81688.

Applications should be addressed to the King and sent to the University of Tromsø, Postboks 635, 9001 Tromsø, NORWAY before September 29th 1983.

(5024)

PORTSMOUTH POLYTECHNIC
COMPUTING CENTRE

LECTURER/SENIOR LECTURER

The National Advisory Board for Local Authority Higher Education has approved an expansion of courses in Information technology in the computing Centre. As a consequence of this approval, applications are invited from good Honours Graduates, with recent research or industrial experience, to contribute to teaching and research activities in the following areas:

- Programming and Programming Methods
- Data Organisation and Processing
- Information Technology
- Information Systems
- Software Engineering
- Expert Systems

Salary scale £7215-£13,443 p.a.

Application forms and further particulars *from* the Personnel Office, Portsmouth Polytechnic, Nuffield Centre, St Michael's Road, Portsmouth PO1 2ED. Tel: (0705) 825451. Please quote Ref. F4.

Closing date for applications: 26 August 1983

(4969)

The Polytechnic of North London

GRAPHICS ADVISER

This post in the programming section of the Computing Service exists to promote the wider use of computer graphics facilities throughout the Polytechnic.

Experience with interactive graphics is essential, together with an interest in developing software to supplement existing packages. The principal responsibility is to advise users on applications and assist them in implementation.

Computing facilities include a Dec System 10, a Vax 11/780 and a wide range of microcomputers, and career development is not restricted to the graphics area.

Applicants must be graduates with at least one year's solid programming experience, preferably in Pascal, Fortran or Basic.

Salary scale (under review) is currently £6496-£8184 inclusive of London Allowance.

Commencing salary in accordance with qualifications and experience.

For further details and application form please apply to Peter Jeffreys, Head of Computing Services, Polytechnic of North London, Stapleton House, Holloway N7 8DB, Tel: 607 2789, Extension 2296.

(4845)

FINANCE DEPARTMENT

DATA PROCESSING MANAGER

GRADE PO1-4 (£11,993-12,941 inclusive)

Shetland Islands Council *is seeking to appoint* as a Data Processing Manager a commercially orientated D.P. professional to head the authority's central computing facilities. The Computer Section provides systems development, operational and date processing services to user departments.

The authority currently has installed both a CMC Sovereign Micro Computer and a CMC Reality Mini Computer with a number of remote sites performing local processing. There is a commitment to the installation and development of on-line, interactive systems.

A number of individual Micro Computers have also been recently introduced.

This is a senior appointment and should provide a unique opportunity to a DP professional wishing to move from a Project Leader or Senior Analyst/Programmer role into DP management.

Experience in the field of on-line interactive systems is essential as well as the ability to communicate effectively at all levels within the organisation.

Benefits include a normal 34 hour working week, *repayment* of removal expenses less £50 and the possibility of Council housing.

Shetland offers a stimulating environment with an opportunity to enjoy outdoor and family pursuits.

Application forms are available from the Personnel Department, County *Buildings*, Lerwick. Tel (0595) 2604 or 5222 (Ansaphone service on Lerwick 2604). Applications should be returned to the above address by 25th August 1983.

Reference 5/3/83.

SHETLAND ISLANDS COUNCIL

City of Nottingham

AN EQUAL OPPORTUNITY EMPLOYER

City Treasury – Computer Division

Senior Programmer

Grade SO1/2 £9,060-£10,539

The City Council operates an ICL 2960 Computer with an extensive communications network including an on-line development service. The main language used is RANGE COBOL under GEORGE 3 operating system.

Consideration is being given to the installation of a second mainframe processor and a move to VME.

Applicants should have a minimum of three years' programming experience, at least one having been in COBOL. Knowledge of communications programming, PLAN, or VME would be an advantage.

Application forms and further details available from The Personnel Manager, Ref CT/4791/, City Secretary's Department, The Guildhall, Nottingham NG1 4BT, telephone (0602) 418571 extension 336. Closing date: August 19, 1983.

(4906)

THE UNIVERSITY OF TASMANIA

Applications are invited for the following tenurable posts available from the beginning of the 1984 academic year:

SENIOR LECTURER/LECTURER IN COMPUTER SCIENCE

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Salary ranges: Senior Lecturer $A30,096 – 5 increments – $A35,077 p.a.; Lecturer $A22,430 – 7 increments – $A29,467 p.a. Application forms, detailed information about the posts and employment conditions may be obtained from the Staff Officer, University of Tasmania, Box 252C, G.P.O., Hobart, Tasmania, Australia 7001, or from the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF. Applications close 30 September 1983.

(4882)

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(4883)

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